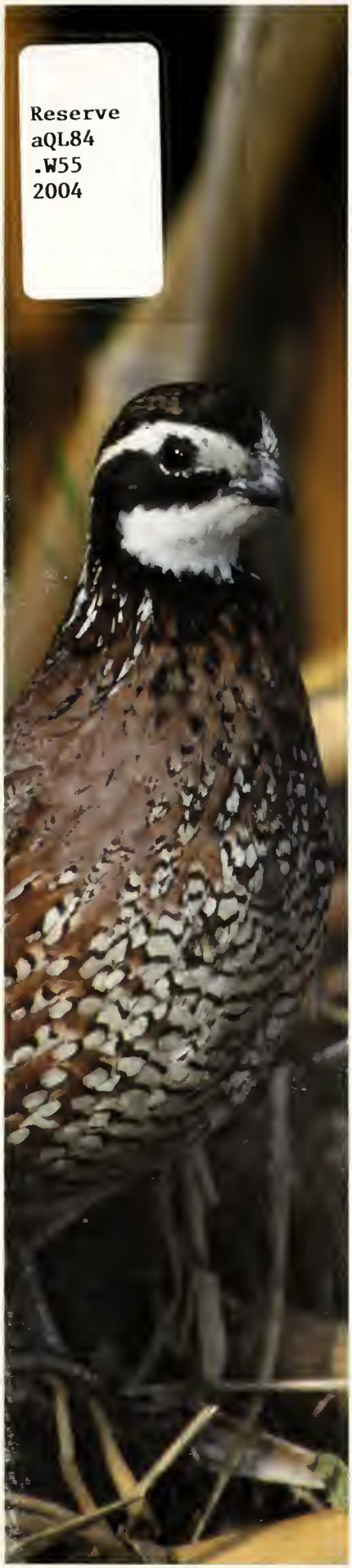
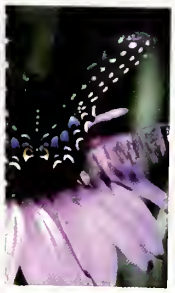


Wildlife Habitat Basics-
A series of 52 short articles on wildlife conservation

United States Department of Agriculture

NRCS Natural Resources Conservation Service

NRCS State Offices in the Midwest
in cooperation with the
NRCS Wildlife Habitat Management Institute



Wildlife Habitat

A series of 52 articles on wildlife habitat needs

Learn favorite foods and cover to attract your favorite wildlife

Figuring out the habitat you want to provide for wildlife on your land can be complicated, especially if you have no one species in mind but instead want to have everything from bluebirds and butterflies to turkeys and quail on your land.

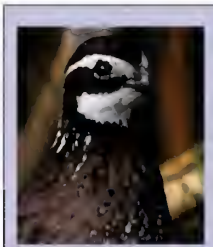
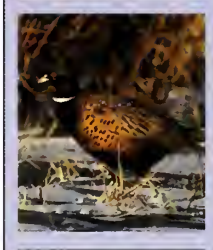
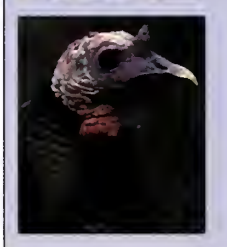
Individual species have specific needs. What you do to provide habitat for one critter might be the wrong thing to do for another one. A good way to go about establishing habitat is to see us at the local NRCS office or talk with another trained wildlife biologist to develop a plan to maximize habitat.

The NRCS, state fish and game agencies, the U.S. Fish and Wildlife Service, and a number of wildlife organizations have biologists who can help.

Look for both financial and technical help to establish and maintain habitat over the long term.

The chart gives a quick overview of the basic food and cover needs of three popular wildlife species.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

	Favored Food	Favored Cover
	Seeds, including annual ragweed, foxtail, lespedezas, partridge pea and waste grain. Seeds should be available on bare ground with overhead protection.	Bare ground interspersed with upright plants, including native "bunch"grass and forb mixtures. Also, annual forbs, shrubs and trees.
	Waste grain, especially corn, but also oats, wheat, barley and soybeans. Young eat insects such as beetles and grasshoppers. Weed seeds and legumes.	Dense, erect cool and warm-season grasses at least 8" high at nesting. Wetlands and tree and shrub shelterbelts for roosting.
	Poults eat insects, seeds and berries, while adults will eat anything from acorns and berries to insects and small reptiles. Favorite shrubs-- wild grape, dogwood.	Open areas of grass/forb/legume mixtures for feeding and mating; forested areas as cover from predators and for roosting in trees at night.

A number of USDA programs can help you establish wildlife habitat on land you own for the wildlife you want to attract.

Wildlife Ways
Did you know....

USDA's Conservation Reserve Program has helped landowners triple the pheasant population in South Dakota recently. In Missouri, more than half the bobwhite nests are in CRP. Habitat is the key!

Ten great habitats for fish and wildlife

To improve your land for fish and wildlife, think first of the food, water, cover and space needs of the wildlife you want to attract throughout the year.

Then begin to establish plants, water sources, and other practices that fit those needs. The USDA Natural Resources Conservation Service offers technical help for landowners in planning for wildlife habitat on privately owned lands, and USDA offers financial help for most conservation practices that also enhance fish and wildlife habitat. Here are ten of the top habitats for wildlife:

1. **Restored wetland.** If you had to choose a single habitat or practice, this is probably the one used by the most species.
2. **Windbreak/shelterbelt.** Rows of trees and shrubs offer prime shelter and food in the winter.
3. **Riparian buffer.** Habitat value is enhanced by being next to water, and vegetation along streams improves water quality for fish and wildlife.

NRCSSD03014

More than a third of all native bird species use wetlands.

4. **Diverse grass planting.** Blocks of native grasses and forbs intermingled with forage land and crop fields can offer grassland birds nesting and cold weather cover, and protection from predators.
5. **Managed timber.** Plant lower densities, thin or burn, or leave open spaces or borders of grasses, and legumes. Leave trees along streams for fish habitat.
6. **Habitat connection corridors**. Large blocks of grasslands, wetlands or woodlands are most useful when connected by eorridors of grasses and trees that protect wildlife on the move.
7. **Managed grazing land.** Planned rotational grazing can protect streamsides for fish, create diverse habitat for wildlife, open up dense vegetation canopies, and provide nesting habitat and cover.
8. **Farm pond.** Offers water for wildlife and habitat for fish, waterfowl, frogs, salamanders, turtles and other species. Plant the surrounding area to trees, shrubs and grasses.
9. **Edge plantings.** "Edge" cover, a strip planted between a crop field and forest, meets several wildlife needs at once.
10. **Clean water.** Conservation practices that protect upland soils and streamsides also produce cleaner water for wildlife, fish, livestock and people.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Wildlife Ways
Did you know....

The 35 million acres of habitat created on private lands by the USDA Conservation Reserve Program is as large as the entire National Wildlife Refuge system and state-owned wildlife areas combined, excluding Alaska.

Maximize conservation practices for fish, wildlife

Whether it's in your back yard, on a small acreage, or on a large farm, most soil and water conservation practices you put on your land have some benefit to fish and wildlife. But if you really want to see more wildlife as a result of your conservation work, you need to think about the impact you have on wildlife with every step you take to manage your land. You also need to be sure the conservationist and others you work with know one of your goals is to increase habitat.

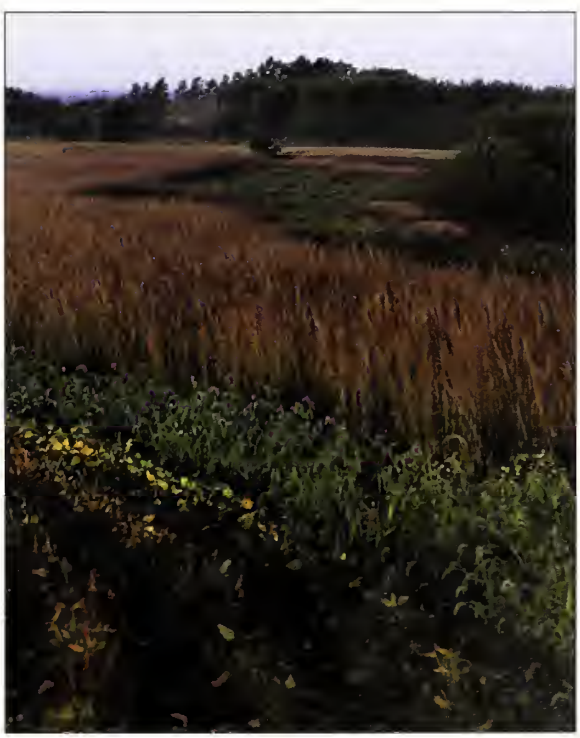
Case in point: common cool season grasses are often easiest and least expensive to get good ground cover to control soil erosion. But some cool season grasses have little value to wildlife--a conservationist who knows you have an interest in wildlife will more likely recommend using native plants. The increased cost of using native grasses may be offset by higher rates of cost-share from the federal government, or help from one of a number of local conservation and wildlife groups.

To maximize your conservation practices for wildlife:

1) Use native grasses and forbs.
2) Place wildlife plantings near water.
3) Use plants that offer food and important cover for wildlife.
4) Use a variety of grasses, trees and shrubs.
5) Use farming practices that maintain existing habi tat.
6) Use maximums rather than minimums for sizes of conservation plantings.

Use grasses, trees and shrubs in conservation buffers and connection corridors between larger habitat areas; use No-till planting for residue cover for small birds in the winter; plant and fence off grasses, trees and shrubs around a farm pond; use more rows, wider and longer, in windbreaks; and plant blocks of native grasses and forbs between wetlands and crop fields to give grassland birds nesting and cold weather cover.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*



NRCSIA03004

A grass filter strip helps save soil and improve water, but to maximize for wildlife, expand to a riparian buffer that has multiple rows, mixes plant types and uses natives.

Wildlife Ways
Did you know....

Quail feed and roost as a unit in winter, posting a sentry when they feed and facing outward in a circle when they roost. 8 of every 10 bobwhite quail hatched each year will not live to be a year old.

Wildlife coming back to private lands

From Connecticut to California, and from Mississippi to Montana, across our entire country, wildlife habitat has been surely and steadily improving in the past 20 years. Most wildlife depends on private landowners to provide the habitats they need to survive, and farmers, ranchers, and other stewards of private lands all across the country are responding to that need.

The USDA Natural Resources Conservation Service has a long legacy of helping farmers and ranchers conserve soil, water, wildlife and other resources on private lands. Over the last 20 years, we and our conservation partners have used new USDA conservation programs to help tens of thousands of landowners establish millions of acres of productive fish and wildlife habitat throughout the country.

Restored wetlands and grasslands, conservation buffers in crop fields, newly planted trees and other habitat are working well with wildlife reintroduction and conservation programs of state fish and game agencies and private wildlife organizations. Together, in many cases the result is a dramatic return of wildlife diversity and population to levels of 50 to 100 years ago.

For example, farmers have converted about 35 million acres of environmentally-sensitive cropland to grass, trees or other vegetation. USDA programs have helped triple the pheasant population in South Dakota and double it in North Dakota, Ohio and Minnesota. In Missouri, more than half of all bobwhite nests occur in grass planted through the program, though it covers only 15 percent of the landscape.

Columbian sharp-tailed grouse are on the increase in Colorado, and prairie chickens have quadrupled in Minnesota and returned to parts of Texas.

At the turn of the century, there were no wild turkeys in Iowa; now, wild turkeys number in the thousands and are found in nearly all of Iowa's 99 counties. Only one bald eagle nest could be found in Iowa in 1977; now there are more than 100 nests.

Private landowner and USDA efforts to improve coldwater streams in the Midwest have led to the return of natural trout reproduction in an increasing number of streams.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Photo by Gary Kramer

Bald eagles are among the many wildlife species making a comeback on privately owned lands in America.

Wildlife Ways
Did you know....

The bald eagle's binocular vision enables it to see a rabbit a mile away, while it is flying high on air currents. The bald eagle became the national symbol of the United States in 1782 and is protected by Federal law.

Keys to cows and wildlife sharing grasslands

Grazing of rangelands and pasturelands can be compatible with good wildlife habitat, if you follow a few key guidelines.

Heavy, continuous grazing is of little value to wildlife. It's also not recommended for optimum pasture production. High intensity grazing, where pastures are divided and heavily grazed for short durations on a short-term rotation, are good for pasture production but tough on wildlife. When bison grazed the West in large numbers, they were a natural system of grassland management that allowed for grazing and coexistence with many other species of wildlife. It worked because the bison didn't graze any area into the ground-- they grazed and moved on to greener pastures as needed. This meant the area they left was rested, too.

You could either look at it as a huge pasture the bison grazed lightly, or as a series of pastures the bison rotationally grazed. Either way, it was compatible with other wildlife species because grass cover was usually in abundance.

To be of value to nesting grassland birds, for instance, a pasture shouldn't be grazed closer than 6 inches to the ground. An excellent system of grazing for both cattle and wildlife is to use a combination of cool season grasses and warm season grasses. While cattle graze cool season grasses early in the year, birds are nesting in warm season grass pastures. Nesting is complete when cattle are turned into warm season pastures in mid-summer, when they are most productive. Using one or more of these rules of thumb helps optimize grazing production and wildlife habitat:

1) Provide 30 to 50 days of rest between grazing in each paddock or pasture.
2) Defer grazing in some nesting areas until late in the nesting season.
3) Restrict livestock form sensitive grazing areas.
4) Graze the entire pasture at a light rate, leaving grass 10 inches tall all summer. Put the herd on just half of the pasture during the late season.
5) Fence livestock away from ponds, shelterbelts, windbreaks, woodlands, and other areas conducive to wildlife.

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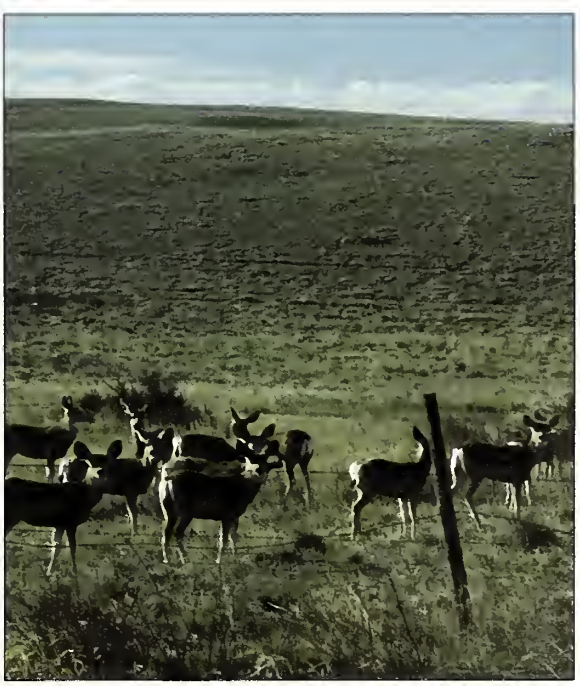


NRCSMT01089

Managing to leave forage for livestock can also mean leaving food and cover for wildlife.

Wildlife Ways
Did you know....

Cows and calves are the best friends waterbirds could have in the wetlands of the Great Basin in Nevada. A study shows birds have learned that protective cows will keep coyotes away from their nests as well as calves.

Wetlands contend for most productive wildlife habitat

Wetlands rival the tropical rain forests as the most biologically productive habitats in temperate regions of the world.

Consider the facts:

1. Wetlands in the United States support nearly 200 species of amphibians, 5,000 plant species, and a third of all native bird species.
2. About one-half of the 188 animals that are federally designated as endangered or threatened in the U.S. are wetland-dependent. Of these federally listed animals, 17 are bird species or subspecies.
3. Most freshwater fish depend on wetlands. Some wildlife species spend their entire lives in wetlands, while others use them intermittently for breeding, nesting, feeding or rearing their young.

Benefits of Wetlands to Birds.

Birds use wetlands for breeding and rearing young. Birds also use wetlands for feeding, resting, shelter, and social interactions. Some waterfowl, such as grebes, have adapted to wetlands to such an extent that their survival depends on the availability of certain types of wetlands within their geographic range.

Birds find food in wetlands in the form of plants and invertebrates such as shellfish. Birds also feed on small mammals and other birds.

Birds also find shelter in wetland vegetation from predators and the weather. But beware: predators are likely to abound where birds concentrate, breed, or raise their young. Some predators, such as the raccoon, are well adapted to both wetland and upland environments, and take large numbers of both young and nesting birds.

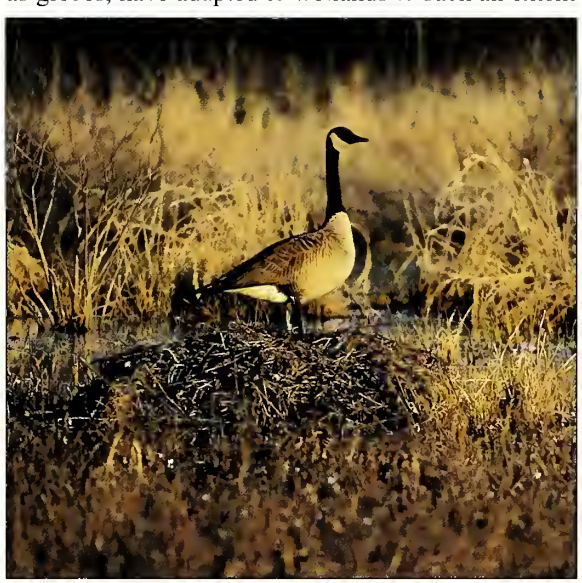
Mammal habitat in wetlands.

Few mammals are as closely tied to wetlands as are many birds, but the food, water and shelter wetlands offer are attractive to many mammals and species of upland wildlife.

Restoring wetlands.

The U.S. Department of Agriculture has programs to aid landowners in restoring wetlands, offering both technical and financial assistance. While restored wetlands are usually not as desirable for habitat as natural wetlands, they do offer quality habitat for many species.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*



NRCSIA99581

Canada geese are among the many birds that depend heavily on wetland habitat.

Wildlife Ways
Did you know....

About one-half of the nearly 200 animals federally designated as endangered or threatened in the U.S. are wetland-dependent.

Restored wetlands giving new life to waterfowl, wildlife

As our country developed into the most agriculturally productive nation in the world in the 1900s, more than half the nation's wetlands were drained. In some states, more than 90 percent of the native wetland habitat was converted to farmland.

The wetlands were drained with public and government support in an effort to expand agricultural production, particularly in the first half of the last century.

Not surprisingly, waterfowl numbers dropped as wetlands were drained.

More recently, especially in the past 10-15 years, better knowledge of the values of wetlands has led to public opinion and policy changes to restore wetlands rather than continue to drain them.

And, of course, as wetlands are being restored, waterfowl and wildlife are responding.

The U.S. Department of Agriculture's Wetlands Reserve Program has helped private landowners restore more than a million acres of wetlands since 1992, averaging more than 100,000 acres a year.

These restored wetlands give benefits on a continental scale to migratory birds. Many birds nesting in Canada or on restored WRP sites in North Dakota and New York also winter in Louisiana or Mexico and Central America.

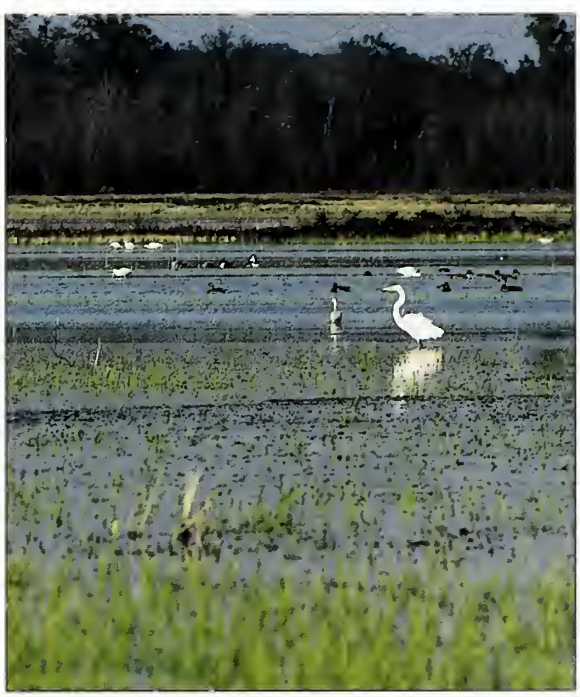
A scenario that's being repeated across the country in varying scales comes from the Raft Creek Bottoms along the White River in Arkansas.

In the first year of a new 7,000 acre wetland restoration, more than half a million waterfowl visited the site. The following spring, 20,000 shorebirds foraged in the mudflats and bald eagles nested in the trees.

Similarly, birds flocked to the Red Slough in Oklahoma when 7,500 acres were restored by local landowners. More than 250 species of birds have now been sighted, including some first-time nesters in the state such as wood storks, willow flycatchers and white ibis.

In addition to wildlife benefits, research has shown that wetlands trap 50 percent of dissolved phosphate, 70 percent of dissolved nitrates, and up to 40 percent of dissolved organic nitrogen.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*



NRCSLA00021

A restored wetland in Louisiana is part of a national effort to restore rather than drain wetlands.

Wildlife Ways
Did you know....

The USDA has helped private landowners restore more than a million acres of wetlands in the U.S. since 1992. The restorations help tens of millions of migratory and nesting waterfowl as well as other wildlife species.

Technical, financial help for wildlife and fish habitat

If you're interested in getting technical and financial help to establish wildlife habitat on your land, look beyond USDA programs with wildlife in the name.

Why? Because other USDA programs have wildlife habitat as one of their goals, and they may offer more financial incentives than the Wildlife Habitat Incentives Program (WHIP). And, you may be able to get into those programs right away.

WHIP is a good program, but landowners who look only to it for habitat help are making a mistake, advises Pete Heard of the Natural Resources Conservation Service. Heard, Director for the NRCS Wildlife Habitat Management Institute, says the Wetlands Reserve Program, the Conservation Reserve Program, the Environmental Quality Incentives Program and the Grassland Reserve Program also offer excellent opportunities for habitat help.

NRCSSD03008

A number of USDA programs can help you establish wildlife habitat on land you own.

The WRP and CRP offer land rental payments as well as substantial cost-share for installing practices. And the restored wetlands and surrounding grasses, trees, and shrubs planted as part of a restored wetland offer about the best variety of habitat you can find for wildlife. Same goes for the grasses and trees in whole field CRP or those along streams as part of a conservation buffer in the continuous signup of CRP. Then, too, habitat can be created with the EQIP program, even though the primary goal of an EQIP contract may be to improve water quality or reduce erosion.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

The Farm Service Agency office, state fish and game, or a wildlife group can also provide help.

Another web option: www.nrcs.usda.gov/programs/farmbill/2002/ or www.fb-net.org

Wildlife Ways
Did you know....

More than 70 percent of the land in the United States is privately owned; accordingly, most wildlife in the country depend on private citizens for the habitat that determines their well-being.

Shrub borders give the edge to wildlife

Got a well-kept farm, but not seeing as much wildlife as you would like? Could be you have very little edge habitat, that zone of shrubs, grasses, legumes and weeds between forests and crop fields.

For wildlife habitat, you want a "soft" or gradual transition from crop field to woodland, rather than an abrupt change from one to the other.

A shrub border of lespedza, indigobush, crabapple or other shrub can help you do that.

Plant five to seven rows of shrubs between the field and the woodland. Spacing depends on the mature size of the shrubs you choose; typically, they are planted 4' to 6' apart within the row and 8' apart between rows, so they can be cultivated.

The more variety in the shrubs, the better for wildlife. That's because some shrubs offer better nesting cover than others, some better escape cover, and some are better loafing cover. The mixture of shrubs also gives fruits that mature at different seasons, fruits that remain on the plants for different lengths of time. For both reasons, the mixture of shrubs will attract a more diverse group of wildlife.

Shrubs commonly recommended for borders include lespedza, silky dogwood, American plum, chokecherry, blackhaw viburnum, indigobush, and crabapple.

Prepare a clean seedbed and be prepared to cultivate the weeds between and beside each row for the first year, to eliminate competition for young shrubs.

You can improve the shrub border's value to wildlife by adding ten more feet of grasses or legumes on the crop side of the border. A mixture of partridge pea and Korean lespedeza will offer young quail and turkeys a prime bug area.

Native grasses like little bluestem and Indiangrass work well, as do a number of clovers. Another good option is to plant an annual game bird mix including seeds such as milo, millet, soybeans or wheat. It's a built-in food plot near a wooded area that you would leave standing for two or three years.

You could also disk the area and allow native weeds to regenerate naturally. Discing the area once every three years will help to spark new growth of weeds.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCS Photo

A mixture of grasses, shrubs and trees offers a diversity of habitat that will attract a diversity of wildlife.

Wildlife Ways
Did you know....

Northern mockingbirds, found year-round over all of the United States, were captured and sold in the 1800s because of their singing abilities. Male mockingbirds imitate calls and songs of other birds as they grow older, often singing as many as 150 different songs at adulthood.

Maximize CRP plantings for wildlife

When the U.S. Congress created the Conservation Reserve Program in the 1985 farm bill, the primary intent of the CRP was to convert cropland to soil conserving plants and reduce crop production.

Wildlife habitat was a side benefit of the program then, but in more recent farm bills, it has beeome a primary goal of CRP along with stopping soil erosion and improving water quality. As more emphasis has been placed on developing wildlife habitat, the technical guidance from the Natural Resources Conservation Service has reflected the interest in habitat among landowners.

The NRCS can help you develop a wildlife plan on all CRP land, including general large fields and the continuous CRP signup tracts for conservation buffers such as streamside riparian buffers and grass filter strips.

Plant diversity the key. A diverse base of plants will support a greater diversity of wildlife, for both food and cover. Green growing plants provide browse for rabbits, deer, other mammals and some birds in spring and summer, and are a forage base for insects. Birds, reptiles, amphibians, and many mammals will feed on the insects that flourish in a diverse planting of grasses, legumes and forbs--that's especially true for birds at brood rearing time. Seeds from ragweed, pigweed, smartweed, and foxtail are heavily used by wildlife in the fall.

Plant shrubs and trees. Shrubs, espeeially those that fruit during the summer, add a food, escape cover and nesting component to your CRP for many species. Shrubs provide escape cover in grass areas and a transition zone for wildlife movement if located properly between timber areas and grass fields. Clump or irregular linear plantings are better than rows. If trees are a component of your site, leave some snags for cavity nesting birds and mammals.

Managing grasses. A diverse planting of native grasses (big bluestem, switchgrass, little bluestem, sideoats and indiangrass) and forbs will provide better winter cover than cool season grasses (bromegrass, orchardgrass, etc.) since they resist lodging.

Food plots. You may have a food plot as one part of your CRP plan. Multiple food plots are desirable because they distribute rather than concentrate wildlife in one area, and reduce travel distance for smaller species such as quail. Put them next to wetlands or trees and shrubs if you can, where there's good winter cover. Discing cool season, introduced grasses can provide another food source. Be sure all food plot activity is in the CRP plan and is preapproved.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSIA00042

A streamside buffer established with the CRP continuous signup includes native grasses and trees that offer wildlife a diversity of habitat.

Wildlife Ways
Did you know....

Fish and wildlife diversity can increase by up to five-fold by planting trees, shrubs and grasses along streams.

Forest edge helps wildlife, gradually

Edge-- the transition zone between two different types of vegetation-- ean be key to good wildlife habitat on a farm.

How good it can be depends on the diversity and quality of the plants that offer food and eover. Just as importantly, those plants need to ereate a gradual transition from the tall forest trees to the relatively short crop or grass field next to it.

Most transitions are abrupt-- but the direet change from low ground eover in a erop field to tall trees doesn't help wildlife.

What many species like is a wider, more gradual border area. At least 30 feet, but preferably wider zone of grasses, weeds, shrubs, vines and small trees offer the berries, seeds, browse, and inseets helpful to wildlife.

Northern bobwhite quail is among the species that relies heavily on edge habitat.

Creating a forest edge.

The transition edge can be eonverted from no transition by planting shrubs or small trees. Another option is to encourage the area to revert naturally to native plants. Stop grazing, mowing or cropping the area and the natural process will probably work in short order. A light disking or other periodic disturbance will help weeds and other native speeies to eome along more quickly.

If the trees in the forest are close to one another, the edge can be improved by thinning the tree stand. Consider a commercial timber sale, or eutting trees for firewood. Thinning the stand near the edge allows sunlight to reaeh the forest understory. The sunlight then promotes more growth of plants that offer food and eover for wildlife.

Creating forest openings.

An option or addition to ereating edge on the outside of large tracts of forests is to ereate small openings within the forest. Ungrazed elearings in a forest diversify the habitat, and offer woodland birds sueh as wild turkeys the annual weeds, grasses and seedlings that poults need.

With seleetive thinning, good fruit and nut produeing trees, den trees, and snags ean be left for more food and eover for wildlife. It's a good idea to have five to ten aeres of small elearings for every 100 aeres of forest, with elearings ranging from one to three aeres.

For more information, visit your loeal Natural Resourees Conservation Serviee offiee, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSIA00045

Good edge habitat has a gradual transition from tall trees to shrubs to grasses or crop fields.

Wildlife Ways
Did you know....

The black-capped chickadee, which prefers edge habitat, stores or caches seeds and insects in bark, dead leaves and knotholes. Each bit of food is stored in a separate place, remembered as long as a month before the meal.

Golden rules for great food plots for wildlife

If you have harsh winters and want to help wildlife through them, food plots can help. But there area few key rules you should follow in planning and planting the plots to attract and aid your favorite wildlife species.

Food plots near escape cover.

Food plots will tend to concentrate wildlife--both the species you want and the species you don't. If you're planting the plot so you can find a covey of quail or pheasants, you can bet that fox and other predators will also be looking in the prime feeding area for them. So escape cover needs to be close so that the food plot isn't a cruel trap for your favorite species.

More, smaller plots.

Several small food plots are better than one larger one. You'll get more diversity of species with more locations, and the escape cover will be closer to feeding wildlife. But larger food plots may be needed if you have heavy deer populations that wipe out the food supply before the winter is over. You want your food supply to be available to your favorite species all winter.

Guard against soil erosion.

Steeply sloping soils plowed or disced for planting are exposed to water and wind, and will erode if precautions aren't taken. See the NRCS to be sure the land is protected against erosion.

Choosing food plants.

Plant food to attract and support the wildlife species you want. Along with other recommendations, the NRCS office has information on the best foods to offer various wildlife species.

The three common types of food plots are annual grain plots; green browse plots, and fallow areas.

Corn, grain sorghum and forage sorghum are favorite grain plots for pheasants and quail. Green browse plots with pure stands of high-protein legumes and grasses are used by quail, pheasants, turkeys, songbirds and others. Winter wheat, rye, millets and buckwheat are favorites of migrating waterfowl. Fallow plots are disced or otherwise disturbed croplands that are tilled but not planted, that encourage new annuals and weeds to grow that are essential to young quail, turkey and many songbirds.

NRCS technical guides, available on the internet, suggest favored food sources.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSIA03047

A corn food plot near a wetland and wooded cover will be well-used by a variety of wildlife.

Wildlife Ways

Did you know....

It's a myth that raccoons dip food in water to wash it or clean it before eating. The purpose is to moisten the food before eating.

Six tips to better forest habitat for fish and wildlife

Just as croplands can produce crops yet yield habitat for wildlife, forestlands can be managed to produce wood products and at the same time benefit wildlife.

Managing a forest with wildlife in mind is like shooting at a moving target. As the trees and other plants in a forest grow and change, the structure, size and species of trees and other plants changes. That shift in habitat also means there will be a shift in wildlife species that live in the forest at the time.

For example, the seeds and fruits of shrubs, grasses and forbs in the early successional stage, after a harvest or other major disturbance, are just what songbirds and small mammals want. On the other hand, woodpeckers, wood ducks, bats and other cavity-nesters want the dead snags and den trees of a mature forest.

For the greatest diversity in wildlife, you want a diversity in the size, age and structure of the forest. That can be achieved with selective harvesting of single trees, to always leave a canopy, or by clearcutting small areas of a forest (15 acres or less) at different times, resulting in several successional stages of even-aged stands of trees within the forest.

The flush of plant growth in clearcut areas lasts for several years.

Techniques to improve fish and wildlife habitat include:

1) Regenerate new growth in open spaces. This may be done by prescribed burning, using herbicides, or planting seedlings.

2) Thin stands; remove weak trees.

3) Plan carefully to carry out a prescribed burn; studies show most wildlife escape, and the new plant growth afterwards attracts wild turkeys, northern bobwhite quail, and more.

4) Maintain forested riparian zones along streams, to allow stream shading and for wood to fall into streams. The leaves, limbs, fruit and insects that fall from streamside forests into the stream build the food supply for fish.

5) Leave snags and den trees.

6) Follow a plan. A variety of federal, state, and private organizations give both technical and financial help in managing forests for profit and wildlife.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCS Photo

Wild turkeys are among the species that like a mixture of mature forest, edge, and open grassland and cropland near forested areas.

Wildlife Ways
Did you know....

National forests cover only 19% of forested land in the United States. Non-industrial private landowners own 59% of the forested land; their actions are critically important to birds, bears, ducks, and other wildlife that depend on forestland habitat.

Burn for better wildlife habitat-- and more

Whether it's to rejuvenate understory plants in a pine forest, get more ground-level food and access for birds in a native grass planting, or bring more prairie plants to bloom, you might want to consider a prescribed burn.

Prescribed burning is using fire to improve vegetation on a piece of land. It may nurture some plants while it harms others. It stimulates growth of new plants, particularly legumes that offer food for wildlife.

Fire won't always improve wildlife habitat, but will if it's done at the right time in the right situation.

Timing depends on goals.

You can set back existing vegetation, remove litter, control woody plants and "release" more desirable species by burning.

Which grass or other plants you stimulate depends on the time of year you burn. For instance, April and May grassland burns will stimulate the dormant warm season grasses more than cool season species. (But it could destroy nests, so don't burn all your grassland at one time.) Late winter burns generally stimulate cool season grasses. Fall burns control woody vegetation and are better for forbs.

Burn in rotation.

Burning a third of the area you want to improve for wildlife each year is a good idea.

Fire safety first.

Safe prescribed burns have to be planned out in advance. Common sense is important, but experience and training are called for because a fire can get away from even the most experienced people.

Before you burn, you should make a fire plan that includes firebreaks, equipment needed, weather and forecast, local permits, notifications and other approvals needed, potential impacts of fire or smoke spread, fences, and other details.

It's essential to establish safe firebreaks or fire lines. Streams or roads are good firebreaks if they are wide enough to contain the fire. The common way to establish firebreaks is to disc strips at least 10 feet wide. The firebreak has to completely surround the area being burned.

The local Natural Resources Conservation Service office staff can get you preliminary information. State or local conservation agencies may have workshops on techniques and regulations.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSIA99187

Fire may be faster and more economical than discing an area, and can accomplish the same result of promoting fresh plant growth.

Wildlife Ways
Did you know....

American Indians set fire to native prairies, knowing that new lush growth would concentrate buffalo. Today, prescribed burning continues to be used to manage vegetation for improved wildlife habitat.

Fish survival dependent on landowner actions

Fish survival is tied to habitat--to their water. And, like most species of wildlife, their habitat condition is often dependent on actions taken by private landowners.

Simply put, fish need food, water, shelter, and favorable conditions to breed and raise their young. A more complex story emerges when you manage habitats for many different fish species, with very different life cycles and needs. Some fish need cold water, others need warm. Some use sandy bottoms, others like to hide under rocks and wood, and so on.

Watershed management the key.

Overall, it's watershed management, particularly the management of the land nearest the stream, that's most important to fish. Healthy plant life along a stream, and a steady flow of clean water are critical.

Land development or poor forestry or agricultural practices can cause erosion that results in sediment that can cement stream gravels and smother fish eggs. Streambank erosion can also mean less overhanging vegetation that contributes leaves and twigs that host some of the insects fish eat. While coldwater fish such as trout have different habitat needs than warm water fish like bass, some general management tips fit all streams to improve habitat:

1) Control upland erosion on fields, pastures, and forests.

2) Maintain vegetation on streambanks, protected from trampling and erosion.

3) Plant riparian (streamside) buffers of trees, shrubs and grasses, preferably native.

4) Install filter strips and waterways to trap sediments.

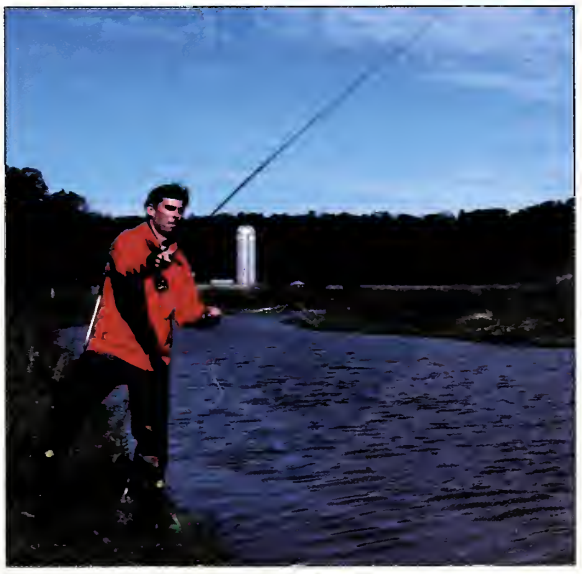
5) Irrigate efficiently, managing water so enough water flows through the stream for fish to move up and down stream to their different habitats.

6) Keep farm chemicals, manure and other harmful ag products out of the water.

In-stream practices.

Meandering streams with riffles and pools, undercut banks with overhanging vegetation, and submerged wood are ideal for trout and other fishes. Keeping streams free of barriers to fish movement up and downstream, and maintaining wetlands and backwaters in floodplains are also important management techniques.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*



NRCSIA99302

Controlling erosion, both in the watershed and along streams, is critical for fish habitat. Streamside plantings are helpful, the more diverse the better.

Wildlife Ways
Did you know....

That slime you feel when you handle a fish is a type of mucus secreted from the skin that's very important to a fish. It's a coating that provides protection against parasites and diseases, covers wounds to prevent infection and helps fish move through the water faster.

Disc to give wildlife a new food source

What's the easiest, cheapest way to provide new food to quail, turkeys, songbirds and other wildlife? And at the same time create nesting and brood-rearing cover for their young ones? Disc.

Discing disturbs the soil to promote the growth of new, smaller plants that young birds can navigate. The new plants then offer seeds as well as a draw for insects that young birds need. Many of the new plants will be weeds. Expect to see more of the same type of weeds that exist before discing; if there are noxious weeds or others you don't want more of, then you won't want to disc in that area.

Creating a disc plot.

While it's easy to disc an area and create the plot, it will pay you to consider where you can get the most good from it. Locate a place next to some good permanent cover-- brushy fence row, woodlot, or near brushy areas along a stream or pond.

You could disc in either spring or fall, but fall may be better because discing will help set seeds from ragweed, sunflowers, beggarweeds and other plants that offer quality seeds to birds.

NRCSGA02014

Discing disturbs the soil and promotes new growth of weeds that attract insects and offer seeds to young quail.

Monitor, disc again.

Watch the plot over the next few years. You will want to disc again--likely in three years-- when it looks like the plot isn't producing much seed.

If you have several plots, you can rotate the discing schedule so you disturb at least one of the plots each year, or part of a plot each year. The diversity of plants offered with various stages of succession after discing will be better for wildlife.

Strip disc grasslands.

Light discing provides more insects and desirable seed at a lower cost than planting food plots, and is an excellent way to enhance grassland habitat for bobwhite quail and songbirds.

If you have large grassland fields with dense sod dominated by a single species, you have a good candidate for strip discing.

Light contour discing of 25-foot to 75-foot wide strips, separated by strips of undisturbed grass that are at least twice as wide, gives the best of both worlds to wildlife. The disced areas produce forbs and legumes which produce seeds and attract insects, and the undisced area will provide nesting cover.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Wildlife Ways
Did you know....

An essential habit bobwhite quail seem to enjoy is called dusting. They scratch a small bowl in the ground, leaving a few inches of finely ground soil to dry. They periodically bury their breast in the bowl of the "dust bath" and shower dust across their backs with their beaks and feet.

Butterflies: the Pretty Pollinators

You'd have to look hard to find a down side to butterflies. Few cause damage to crops or humans, for instance.

On the other hand, on the positive side, they are 1) important pollinators 2) good indicators of the ecological quality of a habitat, as important components of the food chain 3) colorful, aesthetically pleasing, fun to watch and 4) a backyard, park or schoolyard favorite of children and adults alike.

The role of pollination of U.S. crops is not small potatoes. From almonds to alfalfa to apples, pollinators are key to production of 150 food crops worth $10 billion each year.

The honey bee is the most valuable pollinator, only 15% of the crops are pollinated by domestic bees; 80% are pollinated by wild bees and other wildlife, including butterflies.

More broadly, about 218,000 of the world's 250,000 flowering plants, including 80% of the world's species of food plants, rely on pollinators to reproduce.

Butterfly habitat destruction.

The main threat to butterflies is the destruction and loss of their habitats. The channelization of riparian areas, draining of wetlands, lowering of water tables, growth of cities, and intensification of agriculture all contribute to this habitat loss. Widespread use of pesticides may also threaten healthy butterfly populations.

Monarch nectar corridors.

Scientists are particularly concerned about habitat loss in "nectar corridors" -- the migratory routes that pollinators follow in order to take advantage of a sequence of plants coming into bloom along a south-to-north gradient in the spring and the reverse in the fall. The habitat is critical to migrating Monarch butterflies, as well as hummingbirds, bats, and other nectar-dependent migratory animals.

Butterfly habitat.

Adult butterflies rely on nectar, while developing caterpillars need leaves and foliage. Both get their water from the plants. A variety of native wildflowers, trees, shrubs and grasses interspersed across the landscape offers good butterfly habitat. Consider planting wildflower gardens, roadsides and idle areas with native nectar-producing plants, legumes and grasses.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSIA99565

The Monarch is one of more than 700 butterfly species in the United States. Land use changes and development have resulted in significant loss of their habitat.

Wildlife Ways
Did you know....

The Monarch butterfly journeys more than 2,000 miles to winter in warmer climates. This long migration makes the Monarch somewhat different from most butterflies, which hibernate.

Safe nesting cover for quail is sparse, not dense grass

You might think the heavier the grass cover for quail to nest, the better they could hide from predators. But that's not the case.

Bobwhite nests are usually found in sparse vegetation, near the edge of a patch of grass. Their small size gives quail limited mobility, so they avoid heavy matted vegetation like bromegrass, timothy and native warm season grasses like switchgrass.

You're more likely to find quail nests in shorter native grasses with forbs, moderately grazed pastures, idle land, weedy food plots and brushy fence rows and hedgerows. They've been known to nest in no-till fields.

Quail may need only one clump of grass every 30 feet to nest, with sparse vegetation in between.

NRCSIA03039

Partridge pea, ladino clover and other legumes mixed with warm season grasses make good nesting cover for quail.

The grass clump forms an overhead canopy to hide the nest, incubating bird and eggs.

Quail make nests on the ground in slight depressions, from leaves and stems of grasses and forbs, or of pine needles. They nest from April through September; females may lay eggs in a nest and leave the incubation to the male, and start another nest. This "double clutching" is one reason for the long nesting season for quail.

If you already have a mixture of erect grasses, forbs and scattered shrubs or brambles on idle land, you have the habitat quail look for in nesting. Old fields like this will be used by quail for nesting as long as the planting stays diverse and the ground surface is not covered with a densely matted grass.

If the existing plant mixture is good, but too dense, consider lightly discing some of the area or burning it. The disturbance will thin the vegetation and promote new plant growth that attracts insects. This should be done early or late in the year, before or after nesting.

Another option is to plant a mixture of lightly-seeded legumes and bunch grasses. Within a year or two, they should be suitable for nesting, and they will become more attractive as native forbs and woody plants invade.

The new nesting cover should be planted near woody cover if possible, but quail will travel a quarter of a mile to get to good nesting cover.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Wildlife Ways
Did you know....

The familiar *bob-white* call of the northern bob-white quail is given by unmated males during breeding season. Females make that call only in unusual circumstances.

Who cares-- and why should they-- about snakes and lizards?

Creepy. Slimy. Poisonous. Ugly. Only a few of the words that describe many people's negative feeling towards snakes, lizards, toads and other reptiles and amphibians.

They just have a tough time getting people to think of them in a positive light. Even their collective name--herps-- comes from a Greek term meaning "creeping things".

But they have their good points. While all snakes are predators, most are harmless. They're beneficial to humans because they prey on rodents. As a matter of fact, snakes are the world's most effective natural control on rodent population. Garter snakes eat insect garden pests, and one tiger salamander larvae can eat up to 300 mosquito larvae in an hour.

These animals called herps-- frogs, lizards, toads, turtles, salamanders, and snakes -- are part of the balance of nature you learned about in grade school. Their health is an indicator of the health of the environment.

Don't think of the lowly toad as an unwanted guest. If you invite a toad to dinner, it will eat the things you most want to get rid of- slugs and mosquitoes are among its favorite meals. Toads eat insects and invertebrates.

Lizards are probably the most familiar of all reptiles. There are over 3500 different types of lizards throughout the world, existing in all climates. Lizards are as diverse as their dwellings. They are often misunderstood and feared because of a lack of knowledge and exposure.

The truth is, lizards, like so many other reptiles and amphibians, are beneficial to humans.

In many countries, lizards are welcome houseguests, catching and eating many annoying insects. They walk the walls and ceilings and live their lives unharmed by understanding humans.

Some lizards could become non-existent because of a lack of understanding. Beaded lizards and Gila Monsters, the only two poisonous species, are docile creatures but often killed out of fear. They are unlikely to bite pets or people.

Many countries use the lizard in ceremonies. Some Indian tribes of North America used lizard tails in a recipe for love potions. They are also eaten and their skin used for leather.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCS Photo

Fewer than one-third of the world's snake species are venomous and fewer than 10% are dangerously venomous. In the United States, 90% of the snakes, including the hognosed snake above, are non-venomous.

Wildlife Ways
Did you know....

Most snakes can swallow prey that is 3 times or more their own body diameter-- and, the defensive skin secretions of toads do not cause warts. In fact toads are completely harmless to human skin-- but a predator that gets a mouthful can become extremely ill. Toad eggs and larvae are poisonous.

Bats help battle crop pests

Bats get a bad rap. These crop and farm-friendly creatures consume enormous amounts of insects daily.

They eat the beetles, moths, and leafhoppers that cost landowners billions of dollars in damages each year.

Agricultural ally vs. insects.

The benefits of bats to farmers goes on and on. A few examples:

1) Just 150 big brown bats can eat enough cucumber beetles each summer to protect farmers from 33 million of the rootworm larvae. This pest costs American farmers an estimated billion dollars a year.

NRCSTX03001

Mexican freetailed bats leaving Bracken Cave in Texas for their nightly feed. Bats from this and two other nearby caves eat about a million pounds of insects nightly.

2) Bats from just three caves near San Antonio, Texas, eat about a million pounds nightly of insects, including many costly pests.

3) A Georgia pecan grower is no longer losing 30% of his crop to hickory shuckworms. He installed bat houses-- one hosts a colony of 2,000 bats.

4) A little brown bat can eat 1200 insects in an hour.

Fact vs. myth on bats

Misconceptions abound on bats. For instance, they are not blind, they do not become entangled in human hair and they seldom transmit disease to other animals or humans.

Some bats can maneuver like helicopters to pluck insects from foliage, while others fly 10,000 feet high and dive like jets.

Like most animals, bats suffer from habitat loss. Their primary cause of decline is destruction of natural roosts by humans.

Landowners can help by building and putting up bat houses on their property, or working with highway departments to create roosts under bridges. The NRCS is helping to ensure mines that are closed can continue to provide habitat and openings for bats.

Information on bats, including how to build a bat house, how to benefit by attracting bats to bridges, and how to protect bats in caves, is available from Bat Conservation International on the web.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Wildlife Ways
Did you know....

Not only do bats see as well as other animals, they use "echolocation" to detect objects as fine as a human hair in total darkness.

Bring birds to your back yard

Wherever you live, you can bring comfort to wildlife and joy to your own life by offering a bit of habitat to nature's creatures.

With the right plants for food and shelter, you can attract spring and fall migrating birds as well as those that might stay year round.

Add water and, if you happen to have ample space, you can do wonders for birds, butterflies and your own disposition.

Natural food or feeders.

Fruits, nuts, and seeds from trees, shrubs, flowers and grasses will attract a variety of birds. Look to plant those that offer the food the bird species likes that you want in your yard. The same is true for feeding stations; the location, feeder style and food type will determine the birds that visit.

To attract the greatest variety of birds, use a station with a variety of feeder types, such as gravity-fed cylinder tubes, hopper boxes, platforms and suet feeders. Position them at different levels. Offer millet for ground feeders; black oil sunflower and thistle for finches, and peanut and suet for woodpeckers. Locate the station feeders next to natural cover such as evergreen shrubs or trees. The feeders should be clean with fresh food or seed.

Open water, birdbaths.

Most birds need open water for bathing, drinking and controlling their temperatures. A small backyard pond or a birdbath will do the job. The sound of flowing water attracts birds, so a fountain or small waterfall will increase your chances to bring birds to your back yard.

Cover, natural and manmade.

The same trees, shrubs, flowers and grasses that offer food to your backyard birds can offer them cover. The birds use that cover for escape, roosting, nesting and rearing their young. Another option is to build or purchase birdhouses designed for specific species of birds, with the opening size critical.

Backyard booklet available.

The Natural Resources Conservation Service has a well-illustrated, full color 28-page booklet available on backyard conservation available at no charge. It contains names of trees, shrubs, flowers and foods that attract birds. It is available by calling 888-LANDCARE.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCS photo

Goldfinches are sociable and will visit backyards in numbers to eat thistle and sunflower seeds. Use a feeder specifically designed for thistle seeds for finches.

Wildlife Ways
Did you know....

Trumpeter Swans mate for life. The courtship ritual includes synchronized swimming, bill dipping, blowing in the water, and dueting. After courting, young couples may not nest for another year or two

Big impact on wildlife by doing the little things

Sometimes it's the little things you do in life that count. That can be the case with good fish and wildlife habitat.

Everything you do, or don't do, on your land has an effect on the wildlife you share it with and the fish in streams and rivers. Just letting plants grow taller, rather than clipping close to the ground, gives more cover for wildlife. Or letting a few weedy plants grow results in more insects for young birds.

If you think about leaving food or cover for wildlife and fish as you manage your land, you're on your way to doing the little things that can add up to having a major impact. Here are some suggestions along the way:

Grass and hay fields. Leave streamsides, ditchbanks, roadsides, grassed waterways, and other odd areas undisturbed or wait until after the nesting season to mow.

Add flushbars to mowing equipment. Mow hayfields from the center to the outside, giving wildlife a chance to escape to field edges.

Crop fields. Use no-till or conservation tillage to provide cover and food for wildlife in winter.

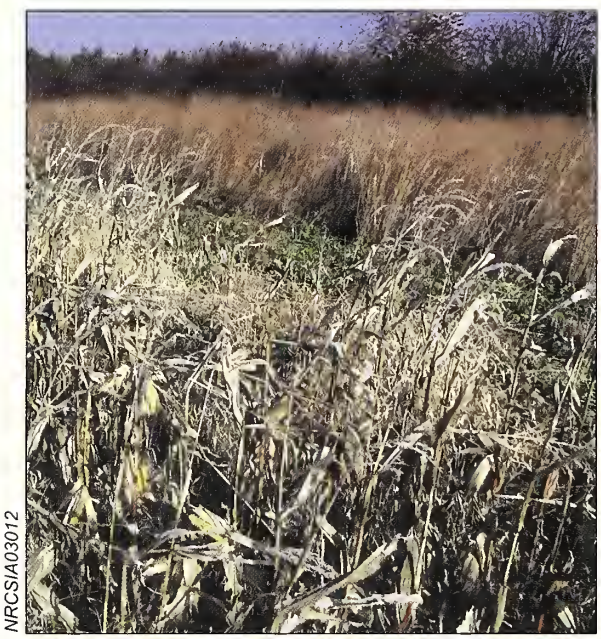
Flood rice crop residue during the winter for waterfowl habitat and shorebirds while allowing stubble breakdown.

Leave a few rows of standing crop along field edges to provide wildlife food. Maximize the likely survival of pheasants, quail and other birds by leaving these rows next to large tracts of grasses, trees or other habitat.

Smart pest control. Use integrated pest management practices to minimize fish and wildlife exposure to pesticides and encourage beneficial insects, bats, raptors and other species to help in reducing crop pests.

Maximize odd areas. Make full use of non-farmed areas by establishing habitat used by the wildlife you want to see on your farm. Use native grasses as well as forbs and legumes. Lightly disc a portion of your grasses early in the year--new growth of annual forbs will encourage insects and produce seeds for pheasants, quail and other wildlife. Plant native trees and shrubs to produce fruits and nuts. Leave dead trees standing in woodlots to provide nesting and foraging sites for woodpeckers and other cavity nesting wildlife.

Put up bird houses, bat boxes, and other artificial nesting structures. For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*



NRCSIA03012

Leaving a few rows of grain standing in a crop field next to good cover is a little thing you can do to help wildlife through a winter.

Wildlife Ways
Did you know....

The great horned owl has a wingspan of 4 feet, and regularly includes skunks in its diet. Females are usually larger than males.

Pines can yield profit, habitat for wildlife

The early growth years of a new pine plantation can offer excellent habitat for quail and other "early successional" birds-- those that thrive on the habitat available as grassland or brushland is changing from bare ground to mature woodlands. The best habitat comes in the first five to seven years of a pine plantation.

Five major decisions.

How you handle five major decisions in managing pines for profit during this time also weighs heavily on how successful you will be with providing habitat. Here are some tips from the Virginia Department of Game for loblolly pine.

Preparing to replant.

After harvest, disturb the soil with a drum chopping or windrowing. Then do a prescribed burn. This will encourage more legume growth during the first few years of the new plantation, with insects and a lot of forage.

How many trees per acre?

Lower densities are better for wildlife because sunlight can reach the ground to produce forage. And, with better seedling stock and the fact that pines compete with other pines, lower rates are more economical and produce faster growth. A common density is 450 trees per acre, at a spacing of 10-foot by 10-foot or 8-foot by 12-foot.

Release from competition.

There are a number of choices for herbicide control of hardwood brush. Some chemicals are being used to kill grasses, weeds and legumes as well as brush. This may help seedlings grow, but will also destroy all the wildlife value. Use legume-friendly chemicals if you plan to treat within two years of planting. Or, wait 4 to 5 years after planting to apply a broader herbicide that would have the same effect as natural grass and legume control by shading.

How to thin a pine stand.

Many operators thin stands 16 to 20 years after planting to 200 trees per acre. Thinning to 150 trees per acre produces larger trees and lets more sunlight reach the forest floor, for wildlife. If that isn't desirable for the entire plantation, thinning along field edges, roads and other openings will benefit wildlife.

Managing after thinning.

Use controlled understory burns on a rotational basis.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSSC0001

It's important for wildlife in a forest to allow sunlight to reach the ground. The sunlight produces forage wildlife need for food and cover.

Wildlife Ways
Did you know....

Loblolly pines are fire-adapted and thrive with periodic burning, once the stand has been thinned. The burns also encourage new plants that give food and cover to wildlife.

Help pollinators help You

For most Americans, pollen means allergies and bees mean stings-- but to farmers, when one out of every three bites of food people take is made possible by a pollinator, bees and pollen mean much more. Pollinators play a tremendous economic role. The problem is, too many people see the pollination process as a free service from nature; most people don't know the unprecedented threats facing wild and managed pollinators worldwide.

Managed honey bee colonies have shrunk by 25 percent since 1990, and there are fewer bee hives now in the United States than at any time in the past 50 years. For more than a decade, biologists have documented declines in populations of migratory pollinators including butterflies, bats and birds. Habitat loss and excessive exposure to agrichemicals, as well as spread of diseases, parasitie mites, invasion of Africanized honey bees, and elimination of government subsidies for beekeepers are most often mentioned for what's been called an impending pollination crisis.

NRCSIA03035

Pollinator-friendly plants include many native wildflowers. An excellent place for them is in streamside buffers next to crop fields

Pollinators are partieularly important to fruit, vegetable and nut growers, with crops valued in the billions. California producers rent half a million bee hives a year for almond trees alone.

On your land, there are several things you can do to help pollinators.

Don't disturb wild areas. Bumblebees nest in grass in old mouse nests, for instance, and other bees nest in dead wood.

Plant pollinator friendly crops. Clovers, alfalfa, trefoils and other legumes enrich and protect the soil and are pollinator favorites.

Use conservation buffers. Current USDA programs offer annual rental payments to plant grasses or trees on qualifying cropland. These contour strips, grassed waterways, hedgerows, filter strips and windbreaks offer some of the best habitat to pollinators, and they can be within the crop field that needs their pollination service.

Let plants bloom. Try to time mowing, tilling or grazing management decisions so that plants have the opportunity to bloom.

Time pesticide application. Your pesticide label lists bee toxicity and residual time.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Wildlife Ways
Did you know....

A bee's wings vibrate about 435 times a second. More than 75 percent of the crop plants that feed the world, and many plant-derived medicines in our pharmacies rely on pollination by insects or other animals for healthy fruit development.

Frogs, turtles, snakes and other herps are in trouble

Before you say you're not disappointed that frogs, turtles, snakes and other "herps" are in trouble, read on.

They may be among the most misunderstood of species; most are not nearly as dangerous as people fear them to be. In fact, they are beneficial in the chain of life, eating insects, rodents and other pests. But they are in decline in the United States and worldwide, largely because of the loss or degradation of habitat. Amphibians have been dubbed the aquatic "canary of the coal mine" beeause they reveal subtle declines in environmental health.

There are specific habitat needs of different species of amphibians and reptiles, and you eould help those species with speeific habitats. But generally, you can help herp habitat by improving habitat for wildlife in general. Steps that help most wildlife species, including herps, are:

1) Keep or establish natural vegetation along ponds, streams, wetlands, crop fields and wherever else possible to protect the land and provide food and cover for wildlife.

2) Large habitat areas are more valuable to herps than a series of small areas. Try to keep from "fragmenting" large areas.

3) Establish well-vegetated eorridors to conneet patches of habitat, so herps can travel from one to another with protection. Many female turtles, for instance, return to their maternal nesting site to lay eggs-- both the nesting site and travel lanes to the site are critical to turtles.

4) Protect and restore wetlands, including seasonal wetlands, some of the most important habitat to amphibians.

5) Establish native vegetation in buffer zones around wetlands.

6) Leave logs, snags, and other woody debris.

7) Leave protective vegetation 50-75 feet wide along streams, to guard against streambank erosion and to provide cover for many herps.

8) Keep cattle out of streams.

9) Don't clear-cut forests, and manage forestland for a diversity of plant habitat with understory.

10) Use selective spot spraying or wiek application if herbicides are applied near waterways. Avoid them if you can.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSNM01030

Most lizards are helpful, eating pest insects. Few are dangerous; they are among the many amphibians and reptiles that need help in habitat conservation or development.

Wildlife Ways
Did you know....

Snakes can go for months without eating. Many turtles live for more than 50 years. And, some frogs can survive being frozen for long periods of time. The world of herptiles-- amphibians and reptiles-- is a fascinating one.

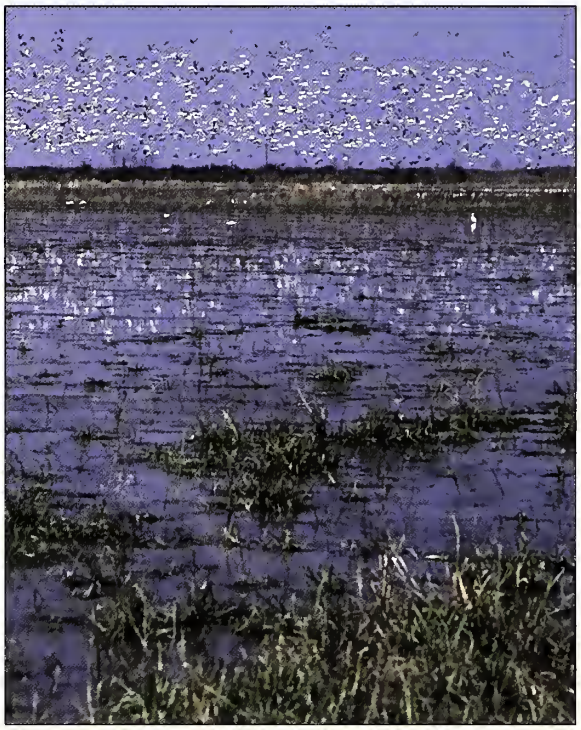
Flood fallowed, harvested fields for wildlife

There's nothing like a little bit of water and food to attract wildlife. If you have the capability to flood fallow or harvested crop fields, you will be rewarded with wildlife many times over.

You'll help wintering waterfowl and water-loving birds by flooding fallow fields to a depth of four to 12 inches. Wintering waterfowl will use it if you flood fields after harvest in October and leave the water on until early March.

If the land is fallowed, you can offer brood habitat to waterfowl by flooding four to twelve inches deep from March to mid-August.

The one time you might not want to flood fallowed fields for wildlife purposes is when the fields already has dense nesting cover-- the water will destroy too many nests.



NRCSLA03002

Flooding a field after harvest in the fall will likely attract migratory waterfowl.

You'll get more diversity of waterfowl and wildlife if you can vary the depth of water. Shorebirds forage on wet mud and in water only a few inches deep. Dabbling ducks and waders will want water up to a foot deep.

On fallow fields, if you can, use water drained from a newly-planted rice field or other crop.

Take advantage of winter rains by adding a board to your water control structure, to allow flooding of the lower parts of your fields. It's easy, and should attract migratory birds to the farm.

Flooding benefits.

The reasons flooded fields are helpful to wildlife, and other benefits of flooding are:

1) Excellent migratory shorebird and waterfowl habitat

2) In second and third year fallow fields flooded in the fall, abundant seed and invertebrate food sources for wintering waterfowl.

3) With spring and summer water-- fields flooded between February and August-- there will be excellent brood habitat and green feed and insects for birds like pheasants.

4) Flooding for at least two consecutive months during the spring and summer will help control Johnsongrass and other noxious weeds.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Wildlife Ways
Did you know....

The Great Blue Heron is one of the most adaptable and widespread wading birds in North America. It nests in colonies in trees, and hunts in shallow water. It wades or stands until it can catch it's prey-whether fish, reptile, amphibian or mammal--which it usually swallows whole.

Build your own: Nests for wood ducks, mallards, bluebirds, and bats

Build it, and they will come. That's not true of nests you could build for many species of wildlife, but there are a few species that have proven they will take up temporary occupancy if you follow their rules of habitat.

Those species include bluebirds, bats, wood ducks, mallards, and Canada geese.

There are very specific rules to follow in both building and placing artificial nests, if you want to be successful over time in attracting specific birds. Wildlife agencies offer free plans on the Internet, as well, and there are books with detailed plans and instruction on location of specific nests. Of course, the nesting structures can also be purchased. The world wide web has a wealth of helpful information on nesting structures: you can quickly get very good information from an Internet search with key words such as "bluebird boxes", "mallard nests", or "bat houses".

Some thoughts from the USGS Northern Prairie Wildlife Research Center to get started:

1. Know where you'll put the nest. Read about other biological needs of your intended species, such as food and cover needs of young. For instance, the mallard hen and ducklings leave the nest together within 12 hours of hatching to look for nearby wetlands with emergent plants for cover and aquatic insects to eat.

2. Follow specific construction plans. Size of box, materials, size of the opening and other details are critical. For instance, if the precise opening isn't used, competitor birds will likely be more of a problem.

3. Think about aesthetics. Curved shapes and earth tones blend into the outdoors better than sharp angles and glossy paint.

4. Plan now for maintenance. Lack of maintenance is the number one cause of failure for most nest structures. For instance, waterfowl don't carry nest material to their sites, so you have to do that for them.

5. Have some patience. Don't get discouraged if your nest isn't used immediately. Where birds aren't used to nest structures, it could be several years before they try them. Once they do, they and their offspring are likely to return year after year.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSIA99589

Properly built and placed, manmade nesting structures can be successful for wood ducks, mallards, Canada geese, bluebirds, kestrels, bats and screech owls.

Wildlife Ways
Did you know....

The decline of the pileated woodpecker almost led to the extinction of the wood duck from North America. Why? Wood ducks use the woodpecker's holes in trees for nests. Man made nest boxes have more recently come to the rescue.

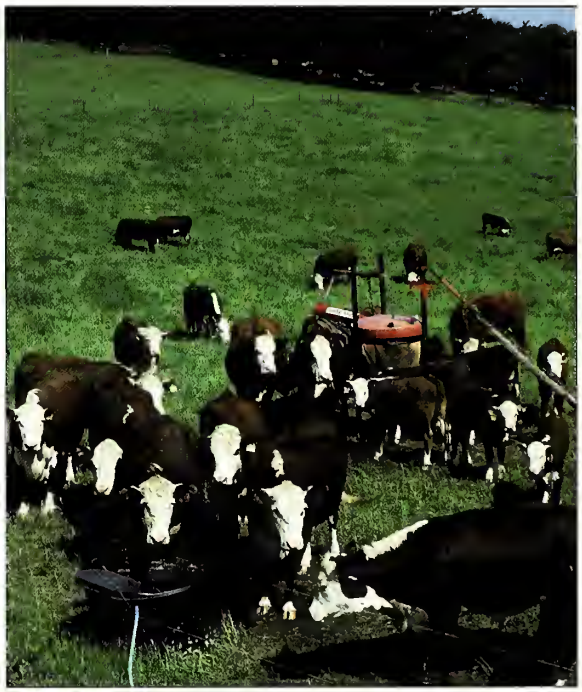
Bird-friendly grazing systems also profitable for farmers

For some time, experts have been promoting the advantages of splitting large pastures into a series of smaller pastures or paddocks, and moving cattle, sheep, horses or other livestock from paddock to paddock during the grazing season.

This rotational grazing pattern allows grasses that have been grazed to build energy reserves and renew vigor. The result is more pasture production overall, better protection of the land against soil erosion, and improved forage quality.

Some highly intensive rotational systems call for moving cattle as often as every other day.

More recently, University of Wisconsin researchers have found that rotational grazing system can also provide excellent habitat for grassland birds, with little or no extra cost to the livestock producer. It's a matter of how the pastures are rotated.



NRCSMI01048

Rotational grazing that leaves at least one large paddock rested during the bird nesting season can be an excellent way to maximize pasture production as well as bird nesting success.

Dr. Dan Undersander says the key is to understand the basic nesting needs of grassland birds, to give them cover during nesting. It takes from 4 to 5 weeks for a bird to build a nest, hatch the eggs and fledge their young. Depending on location, the nesting season usually begins in early May and continues through mid-July.

Grassland nesting birds prefer to nest in open areas far away from trees and buildings. A landowner can optimize a rotational grazing system for grassland birds, then, by deferring grazing on a paddock or two in the center of the grazing system as a temporary bird refuge until at least July 1. Other management tips:

1) Move livestock to new paddocks frequently to minimize trampling.
2) Leave at least 4 inches of grass after grazing.
3) Create a single large refuge in the center of the pasture rather than multiple small refuges.
4) If the refuge is planned for hay harvest later, select it based on high legume content. Or, use native warm season grasses in center paddocks, providing nesting cover early in the year and optimizing forage quality later in the summer.
5) Graze any areas intended as refuges up until May 15 if they are planned for hay harvest later.

For more information, see the University of Wisconsin Extension leaflet on the web at cecommerce.uwex.edu/pdfs/A3715.PDF or visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Wildlife Ways
Did you know....

Grassland birds have declined more in the past 30 years than any other group of birds in North America.

What happened to the bobwhite quail?

There may be no game bird more enjoyed or more studied than the bobwhite quail. Hunters, bird watchers, farmers, suburbanites-- it seems everyone likes to see a covey of quail and hear the distinctive "bob...white" call.

But the bobwhite population has been on a downward spiral for more than 30 years. In the past 20 years, the northern bobwhite quail population has plummeted by 65 percent, according to the Southeast Quail Study Group. What happened to the bobwhite?

Wildlife experts point to degradation and loss of quail habitat as the major factors.

Farming methods began to change rapidly after World War II-- fences and hedgerows were eliminated as fields grew larger and larger. Pastures that had been choice quail habitat were cleared of brush and seeded to fescue, which doesn't provide either the food or cover quail need.

Herbicides and insecticides came into their own as widespread control methods for weed and insect pests on ag lands. The problem for quail and many birds like them is that the insects and weeds killed by chemical control methods are essential to their diet.

So, year by year for the past 25 to 30 years, as brush was cleared, weeds were controlled, fields became larger, and pasture makeup changed, quail lost much of their prime habitat.

Gone was much of the diversity of "early successional" (grasses and herbs, shrubs and young forest), and fringe or "edge" habitat that were once common.

The southeast study group has developed a habitat restoration plan to restore populations to 1980 levels, with a goal of improved habitat on 81 million acres to help produce 2.7 million new quail coveys.

Congress included a stipulation in the 2002 Farm Bill to improve northern bobwhite quail habitat on privately owned working lands. The Natural Resources Conservation Service is allocating $500,000 for a study that calls for state-level evaluations of quail restoration technology and NRCS conservation practices being used on farm, forest and pasture lands. Universities in the quail range will work with the NRCS Wildlife Habitat Management Institute, Mississippi State University, fish and game agencies, Quail Unlimited and landowners on the multiyear study.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCS photo

Habitat studies and restoration programs are underway in many parts of the bobwhite quail range in the southeastern United States.

Wildlife Ways
Did you know....

Male and female bobwhites select a nest site and build a nest together. Both sexes are also known to incubate eggs and brood young chicks.

Nesting habitat key for pheasant populations

Nesting habitat, winter eover, and food for young ehicks are the critical components to increasing ring-necked pheasant numbers in this area.

Dr. Bill Hohman of the NRCS Wildlife Habitat Management Institute and Iowa State University pheasant expert William Clark say habitat for ring-neeked pheasants includes:

Nesting habitat. Although hens will nest in roadsides, grassed waterways and other strips of vegetation, they prefer to nest in bloeks of cover larger than 40 acres that eontain ground litter and a leafy canopy. Undisturbed CRP fields or hayfields not mowed until after nesting can be excellent nesting cover. Iowa studies show hens were three times more likely to nest in cool season grasses like bromegrass and alfalfa than tall switchgrass.

NRCS Photo

A wetland surrounded by native grasses, next to a large cornfield with a few rows of corn left for winter feed is excellent habitat for pheasants.

Winter Cover. Shelterbelts or other woody cover with a shrubby understory, cattail wetlands, and dense stands of native grasses all give good winter cover. Pheasants will spend most of their time within the first 150 feet of the edge of these good patches of cover and move into adjacent crop fields to eat.

Vegetated wetlands are also used heavily by pheasants for roosting and escape and loafing cover from late fall through spring. Pheasant survival in winter can be quite high in areas with a couple of 5-acre shrubby woodlands, or 30-acre wetlands or switchgrass patches.

Food. Waste grain is usually an abundant source of winter food; leave rows of corn or sorghum along field edges for more.

At hatching, young chicks and hen pheasants remain within 100 yards of the nest for only a day or two, then begin to move as much as half a mile away to fields with a mixture of grasses and broad-leaved plants with an abundance of insects.

During the first few weeks of life, chicks feed on beetles, bugs, caterpillars, ground spiders and other slow-moving animals that supply protein.

Weedy edges of fields, hay fields, and native prairies with high populations of broad-leaved plants have many more insects in them than dense grass.

Heavy spraying of herbicides reduces insect populations just as much as insecticide use, because it destroys the weeds that are the habitat for insects.

For more information, visit your loeal Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Wildlife Ways
Did you know....

The ring-necked pheasant was introduced to the United States from Asia before the 1800s. A very popular game bird, the pheasant is now found across much of the northern two-thirds of the country.

Brush piles: good for wildlife in the backyard or in the countryside

Whether it's a series of large piles along a forest edge or a smaller single pile near a bird feeder in your back yard or acreage, you can make your land more accommodating for wildlife by building brush piles.

Piles of tree limbs, brush, rocks, and other debris, large or small, can offer refuge to birds and other wildlife from the weather and predators.

Once common on most farms, brush pile habitat has been lost in many parts of the countryside as fence lines have disappeared along with the diversified agriculture that's now gone with many farms. Larger fields and "clean farming" methods have led to fewer brush piles.

Helpful to many species. Depending on size and location, brush piles are habitat for bobwhite quail, rabbits, ruffed grouse, wild turkeys, skunks, raccoons, woodchucks, chipmunks, mockingbirds, cardinals, juncos and many other small mammals and birds. They may also attract coyotes, foxes, bobcats, hawks, owls and other predators because of the mammal and bird populations using them.

Location. Good locations for brush piles include edges of woodlands, along field borders, and in shelterbelts. Four piles per acre, spaced 150 feet apart, will give ample wildlife cover.

Building the pile. The most important concept in building the pile is to form a solid, rot-resistant base layer with filler above that provides tunnels, dens and openings for animals to hide. Build the base with large hardwood stumps, logs and other large diameter material and then criss cross filler branches on top. Most brush piles are mound or tepee shaped.

An alternative is to "hinge-cut" several trees along timber edges to create a living brush pile. Partially cut the trees 2 feet off the ground, allowing the trees to fall leaving a portion still connected to the stump. Stack more branches on the tree but leave the treetops uncovered so they can grow for a period of time.

When to build. A good time to build a brush pile is in the early spring or late fall, as a part of timber harvest, stand improvement, or firewood cutting.

Maintenance. The brush pile will decay, so it's a good idea to add new material each year.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Iowa DNR photo

Edges of woodlands and field borders are excellent locations for brush piles. They can offer protection to quail and many other small birds and mammals.

Wildlife Ways
Did you know....

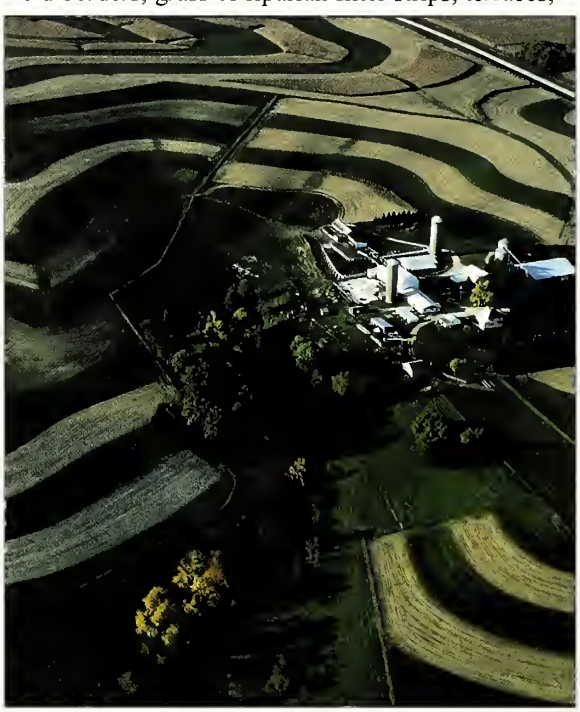
A group of rabbits is called a herd. Jackrabbits have eyes on the sides of their heads so they can see backward without turning their heads. They can run as fast as 45 miles an hour, and hear sounds from a mile away.

Manage cropland for more fish and wildlife

Everything that's done on the land affects wildlife, either positively or negatively. That's true for cropland, where habitat quality is usually considered secondary to profitable cropping systems.

Profitable cropping systems can support wildlife, and produce cleaner water and more productive soil, too. Consider making a conservation plan that includes wildlife habitat in each decision being made. Follow four key thoughts:

Control soil erosion. While soil conservation is basic to all farming systems, if you think about it, covering the soil is as basic for wildlife habitat as it is to soil protection. To have habitat, wildlife must have food and cover, and that's what basic soil conservation practices offer. Grassed waterways, grassed field borders, grass or riparian filter strips, terraces, crop rotations, field and farmstead windbreaks-- all these basic practices offer cover and some food to wildlife. In offering soil protection, they also contribute to better water quality.



NRCSIA99611

Everything you do on the land affects wildlife. Basic soil conservation practices offer cover for many wildlife species.

Use conservation tillage. Leaving plant residues on the soil surface after harvest, and through the next year's crop season as well, protects the soil and offers cover in the winter for many birds and small mammals. No-till farming, where the soil is disturbed little for planting or through the crop season, helps nesting birds. An Iowa study shows 9 times the amount of bird nests in a no-till field compared to plowed fields. Narrow row soybeans are likewise helpful to quail because there is no disturbance during nesting season.

Time operations for wildlife. Delaying any mowing of waterways, field borders, roadsides, or hayfields until after nesting season is paramount to grassland bird survival. There are also small but important operations changes that can be made, such as mowing a field from the center to the edge, to allow wildlife to escape from the mower into adjoining fields. And you can add a flush bar to your mower to get birds out of the way of the blade.

Maximize odd areas. Make full use of non-farmed areas alongside crop fields by establishing habitat used by the wildlife you want to see on your farm.

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Wildlife Ways
Did you know....

Studies have shown no-till fields can produce 9 times the number of bird nests as plowed fields. Riparian buffers at field edges can increase diversity of bird species by five times.

Connecting Corridors: What they mean to wildlife

As you think about the needs of wildlife, it can often help if you put yourself in their place, as best you can. That's true when you think about the value of wildlife connecting corridors.

If you were a wild animal or bird, given the choice, you would probably spend most of your time in a larger patch of protective habitat rather than a smaller one. And, you might well need to move from one habitat patch to another, searching for water or new or fresh food.

But you'd want to get there safely, behind or through some protective cover, hidden from predators, wouldn't you? That's where connecting corridors are valuable for wildlife.

Connecting corridors are the strips of grass and/or shrubs and trees that connect larger habitat areas-- whether they be wetlands, native grasses, woodlands, or other habitat.

In recent years, interest in connecting corridors has grown because wildlife corridors are seen as ways to allow wildlife and plants to spread across natural landscapes that have been cut into pieces by roads, development, logging or other land disturbances.

The corridors allow animals to find new resources and prevent isolation of species.

Studies have shown that wild areas connected by corridors have more wildlife or greater biodiversity than disconnected fragments.

There is some concern about corridors entrapping some wildlife species, since predators can more easily find their prey in a narrow strip of habitat. For that reason, the wider the corridor, the better.

In most situations, landowners creating corridors may want to consider a design that is edge feathered, which includes zones of grasses, shrubs and trees all in the same corridor. The center of the corridor would be planted to trees, with strips of shrubs on each side, bordered on the outside by zones of grasses and legumes. This combination offers habitat for wildlife that may use all three types for food and cover, as well as wildlife that needs only one of the habitat types.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSIA00040

Riparian, or streamside, plantings of trees, shrubs and grasses make excellent connecting corridors. They can sometimes be a wildlife oasis in a sea of crop fields.

Wildlife Ways
Did you know....

Owls have the best hearing of all birds. They fly silently at night; even though many owls live their entire lives near people, they are seldom seen. It is illegal to capture or kill an owl.

Invasive species cost $$$ billions each year

It's not something most people think about every day, if at all. But the problem of invasive species has a huge economic impact on the United States.

One report cited in the national management plan for control of invasives estimates about $140 billion in damages to U.S. crops, industry, the environment and public health.

Invasive plant or animal species are "alien" or non-native to a particular ecosystem; their introduction can cause serious environmental harm or harm to human health.

And they're everywhere. Some examples:

1) The Formosan termite causes $300 million in property damage annually in New Orleans alone.
2) Zebra mussels invaded the Great Lakes through ship ballast water, and now clog water intake pipes to many industries.
3) The nutria, a large rodent native to South America originally imported for a private zoo, is now devastating large wetland areas in the wild.
4) The Asian longhorned beetle, which likely arrived in solid wood pallets made in China, is destroying valuable city trees.
5) Purple loosestrife has beautiful purple flowers, but it's choking out native plants in wetlands and waterfowl habitats.
6) The West Nile virus, transmitted to humans by mosquitoes that fed on the blood of infected animals, is a growing health problem in the United States.
7) Imported red fire ants give painful and potentially deadly stings to humans, livestock and pets in the southern U.S.
8) Invading cheatgrass has increased the fire cycle in the West by 20-fold.

Invasive species often have few natural enemies in their new environment, and out-compete existing species. They have had a negative impact and contributed to the listing of a third to half of the native species on the Federal Endangered Species list. For example, the brown tree snake arrived in Guam in the 1940's aboard military planes. An aggressive predator, it has driven nine of Guam's eleven native land bird species to extinction.

A federal council now coordinates prevention and early control methods for invasives.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCS Photo

Beautiful but dangerous, purple loosestrife is deadly to America's wetlands because it crowds out the native plants that support birds and animals.

Wildlife Ways
Did you know....

Not all alien invaders are from outer space. Each purple loosestrife plant produces more than a million seeds, and only a few summers after introduction, the "purple plague" can grow from a few acres to thousands.

Focus on fish, wildlife with a farm pond

The water a farm pond offers to wildlife makes it an ideal centerpiece for a high quality fish and wildlife habitat area.

The pond's location, design, surrounding plantings, and management all contribute to how successful it can be in meeting your expectations.

Get technical help. While you make the decisions, you don't have to know everything about a farm pond and wildlife plantings yourself. Conservationists with the Natural Resources Conservation Service and biologists with state fish and game agencies have a good deal of experience in designing farm ponds and wildlife areas. Check with them for ideas, technical help, and possibly sources of financial help to build your pond.

Location, location, location. Before you build, you'll want to make sure the pond will hold water, that there's enough runoff or springwater to fill it, that it will be deep enough, won't fill prematurely with sediment, etc. The NRCS office can help. Rules of thumb are to have about 20 acres of land that drain to the pond for each surface acre of pond water.

That land will produce cleaner pond water, longer pond life and higher fish populations if it's forest, grassland or pasture rather than cropland.

Surround with plantings for erosion control and habitat. Seeding grass or legumes around the pond is good for both erosion control and wildlife habitat. Native grasses with forbs, or grass/legume mixes both work well for wildlife nesting and cover. Trees and shrubs can also be planted for escape and winter cover and food. This surrounding buffer area is especially important for wildlife habitat and pond life if the pond is built within crop fields.

If the pond is built in a pasture, it should be fenced. Livestock can trample and ruin pond banks, muddy the water and destroy fish spawning nests. Run a pipe from the pond to a tank below for their water.

Stocking fish. Your state fish and game agency may stock fish free of charge if your pond meets their criteria. In any case, the pond could be stocked with fish you might want to catch. Consider bluegill, largemouth bass, and channel catfish.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSIA03050

Properly built and placed, with surrounding plantings, a farm pond can be the farm's showcase for wildlife habitat for years.

Wildlife Ways
Did you know....

Bass tend to school in groups of similar size fish. If you catch one bass, you're likely to catch more nearby. Bass lie in wait behind cover and ambush their intended prey; find them near rocks, wood, weeds, submerged cover, deep water, etc.

People wild about wildlife

Polling results consistently show that people of our country are coneerned about wildlife and want to help provide the habitat wild creatures need to survive.

That's true whether they live on farms or in cities, and whether they are active hunters, bird-watchers, anglers, or other outdoor enthusiasts.

Pollster Lou Harris has stated that while public opinion tends to swing baek and forth on many issues, his experience with polling on environmental and natural resource issues, including wildlife, shows the public has been shifting in only one diree-tion-- increased interest.

"Basically, what people are asking and pleading and demanding out there is that there be a new wave of commitment by those who purport to speak for the people, who speak the words that they care about the quality of the human experience. The challenge to the leadership is to eatch up with the governed," Harris says, "to catch up now, not later, before it is too late."

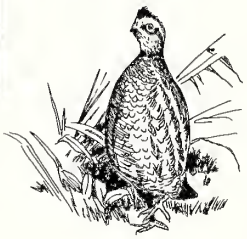
NRCSIA01017

Landowners and non-farmers alike want to see wildlife on privately owned land, and are willing to help enhance habitat.

A sampling of public opinion polls across the country show:

1) In Texas, people are more eoncerned that fish, wildlife, water and soil resources are properly managed than they are about the opportunity to hunt, fish, and boat. For example, while 80% of Texans thought it was very important that wildlife exist in Texas, only 45% thought it was very important that people have the opportunity to hunt.
2) An annual poll of rural Iowans consistently found that eight of ten landowners feel wildlife has as much right to exist on their land as they do to farm it.
3) A national poll conducted by American Farmland Trust showed more than 80 % of people value farms and ranches for their wildlife habitat, with about 60% highly valuing them.
4) While you might think hunters and other out-doors enthusiasts would have a vested interest in the environment and habitat for wildlife, a Minnesota poll found the public in general has conservation attitudes just as strong as people who say they are hunters or anglers.

For more information, visit your loeal Natural Resources Conservation Service offiee, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*



Wildlife Ways
Did you know....

More than 80% of Americans value privately owned farms and ranehes for the wildlife they produce. People are more concerned about wildlife being properly managed on farms and ranches than they are about whether they can hunt or fish.

Ecology lessons: short-term pest fixes may lead to bigger problems later

It's not difficult to find examples of people finding a short term solution to a problem in the natural world, only to discover later they have created a much worse problem long term.

The natural world is a community, where what happens to one species has an effect on other species.

Eliminating predators. Take the case of the people who decided to save the deer herd on the Kaibab Plateau in Arizona. They killed every puma and wolf that had preyed on the deer herd. Sure enough, the deer herd began to grow quickly. But after several years, the deer began to fall ill and die in large numbers.

Soon, there were fewer deer than when the pumas and wolves controlled their numbers. What happened? An analysis showed the larger herd of deer had destroyed plant life, and with limited food supplies the weakened deer were more susceptible to disease. The deer also greatly missed the predators that had helped limit the spread of disease by killing weak and sick animals and eating dead deer to destroy sources of infection.

Similarly, the red-banded leaf roller became a dominant pest in Virginia apple orchards only after a spraying of DDT killed all its predators. It hadn't been considered a dangerous pest before the spraying, but afterward killed half the crop.

Florida citrus growers had had success with biological control since the 1880's with an insect called the Vedalia, but in the 1940's decided to switch to chemical controls. Their spray wiped out the Vedalia, and they lost huge numbers of citrus trees.

Survival of the fittest. Insect resistance to chemical spraying began almost as soon as the spraying began. Repeated chemical spraying weeds out the weaker members of species and reinforces the strongest. Often, insecticide use produces short term successes and long term imbalances-- insects multiply through generations so fast they can be resistant within a year. The list of resistant insects includes almost all of those that are a danger to human health, such as mosquitoes that carry malaria and encephalitis and body lice that carry typhus.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at www.whmi.nrcs.usda.gov or the NRCS home page at www.nrcs.usda.gov

Photo by Jeff Vanuga

Deer populations are more stable with natural predators present than when the predators have been eliminated.

Wildlife Ways
Did you know....

Scientists say 70 to 80 percent of the earth's creatures are insects. Most insect populations are held in check by natural predators--often other insects. This balance of nature is one that has been upset by humans who have killed predator insects as they killed targeted insects.

Wealth of Fish and Wildlife Habitat Information on the Web

No matter what species of wildlife you're interested in, there's likely to be information on it on the world wide web. Lots of it.

For the most part, it's easy to find, too. Just type in the species name on a search engine such as *google.com*, and you're on your way.

Everyone from state fish and wildlife agencies to non-profit organizations promoting a partieular species to more general conservation agencies have information.

The Natural Resources Conservation Service, the U.S. Department of Agriculture's technical agency for conservation on privately owned land, has a wealth of information. It's Wildlife Habitat Management Institute has on-line leaflets that describe habitat needs for a number of the most popular species at

http://www.whmi.nrcs.usda.gov/animals.html

The NRCS home page leads to other wildlife habitat pages, including pages that describe a number of conservation programs of the 2002 Farm Bill.

NRCSMT97008

Find information on many of the plants and other habitat needs of specific wildlife species on the world wide web.

The pages outline available financial assistance as well as technical assistance. The agency's biology manual, and state technical guides are also on the net. The NRCS home page is *www.nrcs.usda.gov*

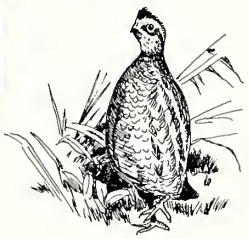
Many universities also have wildlife-related research on the web,with links to research paper abstracts. For instance, there are pages on conservation buffer research, with water quality and soil conservation benefits considered as well as habitat benefits. You can also find research results on rotational grazing, with its benefits for more high quality forage produetion as well as benefits for grassland nesting birds.

State wildlife agencies give information on state-level habitat development programs. That can also be the case with wildlife organizations with local chapters, such as Pheasants Forever, Ducks Unlimited, and Quail Unlimited. Those chapter home pages usually list the services the chapter will provide to landowners to assist in establishing or improving habitat-- and that habitat is often not limited to any one species.

Remember, for more information on wildlife habitat, type in your subject matter in a search engine, or check the web at

http://www.whmi.nrcs.usda.gov

or stop at a local NRCS office.



Wildlife Ways
Did you know....

The U.S. Department of Agriculture's Natural Resources Conservation Service has a reputation as one of the premier land care agencies in the world. It has a local office in many counties of the U.S.

What's your fish and wildlife habitat IQ?

Do you have a good basic understanding of what fish and wildlife need to survive? You probably do if you can answer the questions below correctly. Choose only one answer for each.

1. Everything you do on your land affects wildlife.
a. True b. False

2. What are the basic needs of wildlife?(best answer)
a. Food, water, cover and space
b. Food, water, and shelter
c. Food, water, and a place to raise young
d. Food, water, and winter cover

3. Which habitat statement is most nearly correct?
a. What is good for one species of wildlife is good for all others as well.
b. Individual species have specific habitat needs.
c. Habitat you create for one species will be wrong for all others.

4. A soft, gradual transition from crop field to other habitat is better for more speeies than an abrupt change.
a. True b. False

5. Rotational grazing helps birds as well as cows.
a. True b. False

6. The best conservation practices for fish and wildlife habitat include:
a. restored wetlands, streamside buffers and ponds
b. windbreaks, diverse grass plantings, elean water
c. connecting corridors, managed timber and grassland
d. All of the above

7. Which is not a good general rule for habitat plantings?
a. Prefer natives over exotics
b. Use a variety of plants
c. Create habitat away from water
d. Use plants that offer food and cover for wildlife

8. You may benefit grassland birds by discing old grass.
a. True b. False

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Answers: 1.a; 2.a; 3.b; 4.a; 5.a; 6.d; 7.c; 8.a

NRCSIA01051

Can an owl really turn it's head completely around? No. It's actually a three quarter turn quickly, giving the appearance of a full turn.

Wildlife Ways
Did you know....

The original name for the butterfly was "flutterby"... ..many spiders have eight eyes...pigeons eyes are loeated laterally on their heads, so they can view 340 degrees...a falcon can see a 4" object from nearly a mile away.

Conservation buffers: boon to fish and wildlife

Conservation buffers are strips of grass, trees or shrubs, or a combination of them. As the name implies, a buffer provides a cushion, or buffer, between intensive farming operations and other lands or waterways.

There are a number of practiees that are called buffers. Most common are grass filter strips or grass, shrub and tree riparian plantings along a stream. Contour grass strips in a crop field, farmstead and field windbreaks, and grass field borders are also considered buffers.

A primary reason many landowners establish buffers is to improve water quality. The grass or other vegetation slows runoff waters, allowing sediment and farm chemicals to settle out into the buffer rather than shoot full speed into streams, lakes or reservoirs.

Because the buffer is between the water body and the farm field, farming operations are also kept at arms length from the water body, meaning chemical and other field applications take place away from the stream.

Food and cover. The new vegetation established in a buffer is an opportunity for new sources of food and cover for wildlife.

Native plants, forbs and legumes recommended by the Natural Resources Conservation Service provide the foods many wildlife species want. The recommendations also consider the winter cover that can be provided. A buffer may be ideal as habitat, because it often borders a food source on one side-- the crop field-- and water on the other. Widths critical. While there isn't much question that new strips of vegetation can attract wildlife, there is a question of whether wildlife can survive in a buffer. Since most buffers are long, narrow strips, they are more easily combed by predators. Bird nesting success generally drops off in buffers compared to larger habitat blocks. The wider a buffer, the better.

Plant diversity. As a rule, more plant diversity means more wildlife diversity. Researchers from Iowa State University found five times as many species of birds in a riparian buffer of grasses, shrubs and trees as had existed in a non-buffered pasture before buffer establishment.

USDA/NRCS offers technical and financial help in establishing conservation buffers.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSCA00037

A strong majority of farmers and ranchers want to see wildlife on their land, and are willing to enhance habitat. USDA incentives make conservation buffers an attractive option.

Wildlife Ways
Did you know....

More than 80% of Americans value privately owned farms and ranches for the wildlife they produce. People are more concerned about wildlife being properly managed on farms and ranches than they are about whether they can hunt or fish.

Plant natives or non-native plants for wildlife?

If you're planning to establish conservation plantings for wildlife habitat, you'll face the decision of whether to use native or non-native plants, or both.

There's some controversy on the subject; even the definition of a native plant varies. A useful definition of native is a species that lives in a given area where its life has been shaped by the natural forces of climate, moisture, soils, and species interaction over thousands of years, without assistance from humans. A species becomes non-native when it lives outside its historical range due to transportation by humans.

Some, like dandelions and daylillies, have been around this country for so long they have become naturalized. Up to a third of the plant species in the United States originated from other continents, and most of those estimated 30,000 species pose no danger to natural eeosystems. In fact, virtually all crops and livestoek in the U.S.-- from soybeans and wheat to cattle and honeybees, are non-natives. So is the pheasant.

At the same time, some scientists estimate non-native species cause $123 billion a year in damages in the U.S. They eite examples like kudzu and purple loosestrife. Or the invasive Japanese Chestnut that brought with it a fungus that spread through 225 million aeres in 50 years to kill nearly all American Chestnuts in the country.

Introdueed steelhead, Chinook and coho salmon thrive and don't impaet native fish in the coldwater lakes of the Dakotas. On the other hand, Oregon foresters are reintroducing bunchgrass and other drought-resistant natives to wilderness areas susceptible to fire because, unlike non-natives, they stay green and are adapted to the fire cycle.

Native plants may fare better because they are lower maintenance, and have evolved in place to resist climatic extremes, insects, disease and other local stresses. But well selected non-natives can fare as well.

There are some people with very strong feelings about using natives, and some with equally strong thoughts for using non-natives. The majority is somewhere in between. Best bet: make your decisions on a case by case basis, considering the site, your specific goals, costs and our recommendations.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCS Photo

Both native and non-native grasses are good habitat for the ring-necked pheasant, itself a non-native species in the United States.

Wildlife Ways
Did you know....

Illegally stocked in the 1980's, non-native lake trout could decimate native cutthroat trout in Yellowstone Lake. The U.S. Fish and Wildlife Service says 70% of the 27 fish extinctions in North America were caused in part by non-native fish.

Northern bobwhite quail: habitat basics

Despite being one of the most popular and most-studied species of wildlife, the northern bobwhite quail population has been in a downward spiral for the past 30 years.

Experts say it comes down to habitat and changing land use patterns. Knowing their habitat basics can help turn quail numbers around.

Food preferences. For the first six weeks of their life, quail chicks eat small beetles, bees, spiders, wasps, flies and other insects almost exclusively. They then gradually switch to grass and weed seeds and green plant leaves. In general, grass and fruit seeds, especially those along field margins, are common in summer. Legume seeds as well as ragweed seeds and oak and pine mast are strong fall and winter foods. Waste corn, soybeans and wheat are also eaten in fall and winter. Other important food plants for quail include lespedeza, partridge pea, clovers, dogwoods, honeysuckle, crab grass and beggarweeds.

NRCSIA03046

Wildlife researchers have documented 650 seed foods in the bobwhite quail diet, including ragweed, a favorite.

Since chicks need insects and grass and weed seeds, "early successional" plants are key to their habitat. That's also why disturbance of vegetation by discing or burning is an important component in habitat development. Prescribed burning is an underused but valuable tool.

Nesting and brood cover. Nests are built on the ground, typically within 20 yards of a field opening such as a disced strip or road. Quail will move their brood from moderately dense nesting cover to more open "bugging" areas, where bare ground is interspersed with upright plants, including native "bunch" grass and forb mixtures.

Overhead cover protects quail from avain predators above; open pathways underneath allow a running escape. Known as an "edge" species, quail like field borders and any other gradual edge between crop fields and woodlands, haylands, pastures or abandoned lands. The absence of edge cover can, by itself, make an area unsuitable to quail.

Winter cover. Quail like small fields surrounded by brushy draws, dense brushy cover or wood lots. In winter, look for them in a thicket of trees, brush and vines. Warm season grasses at least 8 inches high offer winter cover, too, as do uncut hay fields and moderately grazed grass/brush rangeland.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Wildlife Ways
Did you know....

It's called the Northern Bobwhite, but the quail's range extends from Pennsylvania to southern Mexico, all across the southeastern United States, and as far west as Colorado. It's one of North America's most important game birds.

Ring-necked pheasants: habitat basics

Want to see more pheasants on your land? Give them better habitat! Consider their food, cover and space needs.

Food preferences. Ring-necked pheasants rely most heavily on waste grain from crop fields, wild and cultivated grass and forb seeds, fruits, and leaves. Crop field seeds include corn, wheat, grain sorghum, barley, oats, and sunflowers. Non-grain seeds include legumes, ragweed, smartweed, and burdock. Hard and soft mast in the summer and fall diet include acorns, pine seeds and wild berries. In their first five weeks after hatching, chicks eat insects almost exclusively. Adults also eat insects, including grasshoppers, crickets, beetles, and caterpillars through the spring and summer months. The foods pheasants eat supplies them with the water they need.

Nesting cover. Dense ground cover with good overhead growth is the key. Alfalfa, wheat stubble, cool season grasses, and native and tame pastures work well. Grassy field corners and odd areas, shelterbelts, field borders and fencerows are also used.

Brood rearing cover. Pheasants want vegetation that is somewhat open near the ground for easy chick travel, with overhead concealment. Native bunch grasses like big and little bluestem, switchgrass, sideoats grama, wheat grasses and Indiangrass offer this structure. Mixed cool season grasses with forbs and other vegetation that supports insects are also used.

Roosting, escape cover. Ring-necks roost in small trees and tall shrubs, or on the ground in brush heaps cattail swales, weedy ditches, and briar patches.

Winter cover. Weedy field borders and fencerows, dense, upright grasslands, abandoned farmsteads, cattail marshes, and evergreen and hardwood windbreaks are good protection in winter.

Interspersion. A good mixture of differing habitat types, located next to one another, is part of the habitat package pheasants need. To attract pheasants and maintain their populations, offer foraging, nesting, brood-rearing, roosting, winter and escape cover in close proximity. A complex of corn, sorghum and small grain crop fields, unmowed haylands, native prairie grasses, unmowed field borders, windbreaks, and cattail marshes should do well.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCS Photo by Tim Tushla

Ring-necked pheasants are found over much of the northern two-thirds of the United States.

Wildlife Ways
Did you know....

The ring-necked pheasant, native to Manchuria, Korea, Japan, and other Asian countries, has one of the widest introduced distributions among birds on earth. People have attempted to introduce it in nearly 50 countries, on every continent except Antarctica.

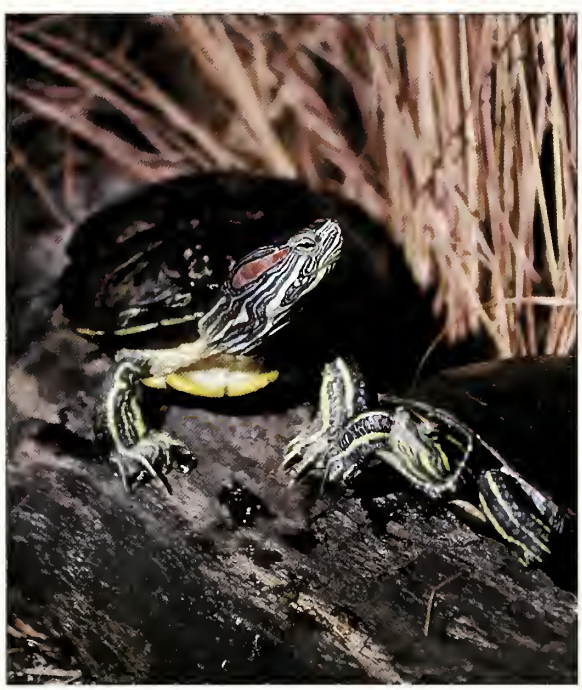
Turtles, frogs, snakes, lizards and other herps: habitat basics

Frogs, salamanders, turtles, snakes, lizards, toads and other amphibians and reptiles may be fascinating to some people, and arouse fear in others. In any case, they are an important part of the web of life.

They're grouped together as herps, or herptiles, abbreviations of the word "herptofauna."

Their habitat varies across the country, and by species. While it is difficult, and sometimes misleading, to generalize, there are similarities of habitat needs for the group.

Food. With so many different species and habitats, herp food needs vary greatly. In general, though, herps play a role in the balance of nature by eating insects, rodents, and other pest species. Since they don't require much energy daily, they can go a long time between meals.



NRCS/A99646

Red-eared turtles are aquatic, but lay their eggs on land and often spend much of their day sunning on rocks or logs.

Moisture. Most amphibians breed in wetlands, so they need ready access to moisture in their home range. As habitat dries, they will seek moist shelter to wait for wetter weather-- salamanders may burrow below ground, for instance.

Varying habitats. Many species of amphibians and reptiles use different habitats during the year. Salamanders may live in the forest but travel to wetlands to breed every spring. Turtles may live in wetlands but must travel onto land to lay their eggs.

For some species, hibernation sites are few and far between, and they may have to move through a number of habitats. This habitat diversity makes it very important for herps to be able to get from one primary habitat to another . Roads and crop fields inhibit their movement, and they need travel corridors for protected movement.

Thermoregulation. Many herps need to acquire heat from their surroundings to regulate their body temperature. They may bask in the sun if they are too cold, or seek shade or go underground if they are too hot. This "thermoregulation" dependence ties them closely to their habitat.

Hibernation. Most northern herps either hibernate or become less active in the winter. Many snakes migrate to rocky outcroppings which they share; others including the garter snake spend the winter underground in crayfish burrows. Turtles and frogs find shallow wetlands where water is deep enough that it doesn't completely freeze.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.nsda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Wildlife Ways
Did you know....

Wood frogs burrow into the leaves of the forest floor to hibernate, and have an amazing capacity to survive being frozen over the winter.

Rainbow trout and other cold water fish: habitat basics

The rainbow trout is a coldwater fish that symbolizes clear, cold, healthy streams and lakes. It's among the top five sport fishes in North America, and many anglers consider it to be the most important game fish west of the Rocky Mountains.

Because it can thrive in hatcheries, the rainbow has been introduced to coldwater streams across America.

But it's having habitat problems. Streambank and upland soil erosion, loss of riparian (streamside) vegetation, water diversion away from the streams, logging and mining, and pollution from municipal and agricultural lands have significantly reduced both the abundance and distribution of the rainbow trout. Dams, road crossings, and other structures are also increasingly impeding the ability of trout to migrate upstream and downstream, interfering with life cycles. Here's a quick look at what rainbow and other trout and coldwater fishes need to thrive.

Food. Trout are opportunistic feeders with a widely varying diet. Small insects like ants and grasshoppers that fall into the stream are prime food sources if the stream has a significant amount of riparian vegetation. Invertebrate food sources include plankton, crustaceans, snails, and leeches. Small fish and fish eggs are also food for trout.

Clean water. Prime trout waters are clear, clean and cold. Water depth and sediment-free spawning gravels are also critical for egg incubation and hatching.

Cover. Bank structure, submerged or semi-submerged logs or branches, boulders, overhanging vegetation, root masses, and undercut banks give protective refuge to trout. Streamside trees, grasses and forbs shade trout streams to moderate water temperature, and also contribute to food supplies in stream. In colder temperatures, deep pools serve as refuges in iced-over streams.

Interspersion of habitat. Cool, clean water with a complex of habitats is ideal. Shallow to deep water, fast-flowing riffles to slow currents, and gravels and pebbles to large rocks and boulders are part of the diversity needed. A high number of complex habitats in a small area increases the number of trout a stream will support, partly because their territories are smaller.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCSIA99033

Clear, cold water and vegetated streamsides that offer insect life as food are important for trout.

Wildlife Ways
Did you know....

Unlike Pacific salmon, the rainbow trout survives after spawning and may spawn two or three times during its life.

Bluebirds: habitat basics

Bright blue in color, melodious in song, the eastern bluebird is a welcome visitor to backyards across much of the United States.

Bluebird populations blossomed when the frontier was settled and forests were cut to establish small fields and pastures. They were helped more by the hundreds of thousands of wooden fence posts used for new field boundaries.

But more recent increasing pesticide use, the introduction of the European starling and the English house sparrow, replacement of wooden posts with steel, and clearing of fence rows hurt bluebirds. Most recently, thousands of concerned people have put up bluebird houses in an ongoing recovery effort to ensure a future for the bluebird.

Nesting from southern Canada to the southern U.S. border, and from the Rocky Mountains to the east coast, the bluebird migrates to winter habitat in the middle parts of eastern North America south into Mexico, the Gulf coast, and southern Florida.

Photo by Roger Hill

Bluebird recovery has been helped by concerned people who have put up hundreds of thousands of bluebird houses.

Food preferences. Two-thirds of the bluebird's diet is insects and other invertebrates; the remainder is wild fruits. Insects, include grasshoppers, crickets, katydids, beetles, earthworms, spiders, centipedes, and sow bugs. Fruits especially useful for winter food, when insects are scarce, are wild grape, dogwood, hawthorn, and sumac and hackberry seeds.
Cover. Grassy areas with scattered hardwoods, including meadows, grazed pastures, yards, roadsides and grassed farmlands are ideal habitat. Mowed areas including golf courses, large lawns, and rights of way are also well used. Open grasses provide foraging habitat; scattered trees or fence posts offer the perches bluebirds use to spot and then swoop down on insects on or near the ground.
Nesting. The eastern bluebird is a cavity-nesting bird, but cannot make its own cavity. It relies on abandoned woodpecker cavities, open tops of rotted out stumps, and holes in wooden fence posts. Manmade wooden boxes are also readily accepted if they are designed and installed correctly. Nest boxes can be used to augment natural cavities in grassy areas that lack snags or natural cavities.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Also, visit the North American Bluebird Society website at www.nabluebirdsociety.org

Wildlife Ways
Did you know....

Some people say bluebird blue is "the most vivid" and the bluebird warble is "the most charming." Their reputation is as a "sweet" bird, but males and females fight among themselves, and sometimes kill each other over mates and nest sites.

Ducks and Geese: habitat basics

Most people know ducks and geese need water and wetland habitats to survive. That need was well illustrated in the 1980s, when a prolonged drought in the prairie pothole region cut duck populations by half.

Fewer people think about the undisturbed grassland habitats ducks and geese need for nesting. Nevertheless, those upland grasslands in close proximity to wetlands are critical for waterfowl as well.

Much of the wetland habitat was destroyed in the last century with the draining of most of America's wetlands. In the past 15 years, though, with assistance from the U.S. Department of Agriculture and other programs, landowners have restored thousands of acres of wetlands and waterfowl populations have responded. Individual species have specific food and cover preferences, but included here is some general guidance on their habitat needs.

Food preferences. Ducks, geese, swans and other waterfowl eat plants--mostly aquatic--and seeds and insects. Crop fields can draw thousands of waterfowl in the fall, to eat corn, soybeans, wheat, rice, barley and other cereal grains. A wide variety of aquatic plants and seeds eaten includes pondweed, smartweed, sedges, bulrushes, and wild millet. In early spring, hens eat insects for protein needed to produce eggs; their young also eat mostly insects and other small animals in their first three weeks of life.

Dabbling and diving ducks. Ducks can be grouped into two feeding types: dabbling and diving ducks. Dabbling ducks, including mallards, wood ducks and blue-winged teal, usually feed in shallow water by tipping up on the surface. Divers, including redheads and canvasbacks, feed by diving to the bottom of ponds and lakes to get submerged plants.

Cover needs. Wetland types include prairie potholes, tundra wetlands, river backwaters, bays in large lakes, coastal wetlands, mountain wetlands and forest wetlands. Wetlands with about half their surface area covered by wetland plants are ideal for waterfowl broods. Idle grasslands, deferred pastures and haylands not mowed until after nesting, in July, are the upland habitat many waterfowl use to nest.

Many species migrate southward, but some stay in winter if food and open water are available.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

NRCS Photo

Most ducks and geese need a combination of wetland habitat and upland grasses to breed, nest and raise young.

Wildlife Ways
Did you know....

Migrating ducks normally fly at high altitudes; some have been spotted at 20,000 feet. Most fly at night, at speeds of 40 to 60 miles an hour. Most people think of migration as a north-south phenomenon, but there is nearly as much east-west movement.

Whitetail deer: habitat basics

Whitetail deer are so plentiful these days in most parts of the country, it's surprising to some people that they were decimated to the point of near-extinction by unrestricted hunting at the turn of the century.

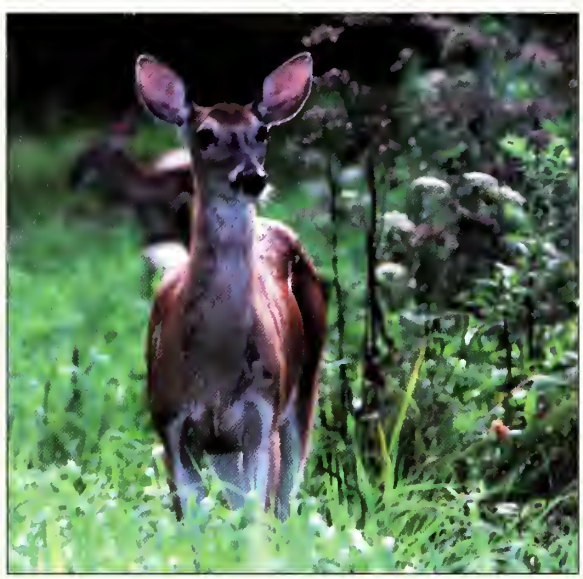
Whitetails are found all over the North American continent, with populations in the millions. They survive in the big woods of northern Maine to the deep saw grass and hammock swamps of Florida. They thrive in mixed farmlands, brushy areas and timber, and can survive the desolate cactus and thornbrush deserts of southern Texas and Mexico.

Most people love to spot whitetail deer, but overpopulations, especially near urbanizing areas, can cause problems. Whitetail deer can be destructive to crops, fruit trees, ornamental plants and gardens. They can also cause serious damage to forest vegetation from overbrowsing, and are a danger to motorists as they are commonly hit by autos.

Food preferences. Deer eat a variety of plants, but in farmland areas, cultivated crops, including corn and soybeans, top the list. A major portion of the diet in the fall is waste grain after harvest. The most critical food need to deer is the fall and winter food supply, because they determine the reproductive success of the doe. In summer months, woody browse such as buckbrush, sumac, and oak is part of the diet. Various forbs and grasses are also part of the diet in the spring and summer. Fawns slowly shift from their mother's milk to forbs and grasses as the summer continues.

Cover needs. Ideal whitetail habitat contains dense thickets for cover, and edges of timber and grass or crop for food. Areas with the largest amount of timber have the highest deer populations. Cold and heavy snow in northern regions cause deer to concentrate in protected areas such as heavy timber, conifer stands, brush, and shrub swamps. During the summer, deer can be found wherever food, water cover and solitude exist. In May and June, does seek seclusion for fawning in brushy fields, heavily vegetated stream bottomlands, forest edges, pastures, and grasslands. Green browse food plots of clovers and alfalfa, and diverse native grass and forb mixtures offer good fawning habitat.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*



NRCSIA99477

Whitetail deer, the most numerous of the large North American mammals, have recently reached their highest population numbers

Wildlife Ways
Did you know....

A female deer usually has one fawn as her first born, but in subsequent years usually has twins. Whitetail deer are good swimmers and often enter rivers and lakes to escape predators.

Eastern Wild Turkeys: habitat basics

The wild turkey has made an amazing comeback in the United States. This wary game bird is a favorite of many hunters and wildlife watchers alike, and it's doing well. Five wild turkey subspecies are found in the U.S. They include the Eastern, Rio Grande, Merriam's, Florida and Gould's wild turkey. Their habitats change with available plants in their region of the country, but are similar. Here's what the Eastern wild turkey likes.

Food preferences. The diet is more than 80 percent plant food, with 10 to 20 percent primarily insects. Young poults eat insects, berries and seeds, while adults will eat anything from acorns and berries to insects, salamanders, snails and small reptiles. Fruits of wild grape, dogwood and wild cherry are favorites. Turkeys also eat numerous seeds, including those of native grasses, sedges, trees and ferns.

Water. A source of open water is necessary to support a wild turkey population. They drink from spring seeps, streams, ponds, lakes and livestock watering facilities. It's critical to have water as well as foraging, nesting, brood rearing and roosting cover all available near each other to support populations.

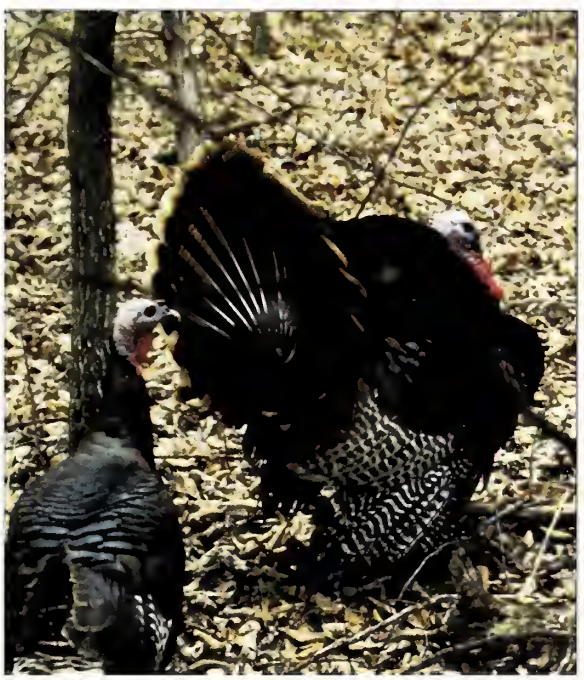
Nesting cover. Eastern wild turkeys nest on the ground in hardwood or mixed forest, usually at the base of sizable trees in dense understory cover. They may also nest under a brush pile, in thickets or under downed trees and branches. Preferred nest sites are near openings or on forest edges where newly hatched poults have access to insects after hatching.

Roosting cover. Wild turkeys roost overnight in trees to avoid predators. The exception is for hens with up to one-month old poults-- they roost on the ground in habitat similar to nesting habitat. Ideal roosting trees are mature, open-crowned trees with branches spaced 18 inches apart that run parallel to the ground, with trunk diameters at least 14 inches, locating within a half mile of a food source.

Brood rearing cover. Wild turkeys like open areas of grass, forb and legume mixtures for feeding. A forest opening of a half to three acres is a good size-poults can eat insects but also see and hide from predators.

For more information, visit your local Natural Resources Conservation Service office, or the NRCS Wildlife Habitat Management Institute's website at *www.whmi.nrcs.usda.gov* or the NRCS home page at *www.nrcs.usda.gov*

Or, check the National Wild Turkey Federation at www.nwtf.org



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The home range of a flock of turkeys is from 350 acres to 60,000 acres. Smaller areas work if all habitat requirements are met.

Wildlife Ways
Did you know....

In the early 1930s the wild turkey was on the verge of extinction. But today, thanks to wildlife restoration programs and willing landowners, the wild turkey is abundant and thriving. It's found in every state except Alaska.

Hummingbirds: habitat basics

If you live in the eastern half of the United States, you may already have seen one of the most colorful visitors that can come to backyards and flower gardens. It's the ruby-throated hummingbird. Once you've heard their hovering hums or the high-pitched chirps of dueling birds, you'll not likely forget them.

Ruby-throated hummingbirds spend summers in a range from Minnesota to Texas to Florida to Maine, across the eastern United States. They have the widest breeding range of any hummingbird in North America, and play an important role in flower pollination of many species.

Their habitat needs are listed below, for people who live in the ruby-throated bird's breeding range. For those who do not, consider similar types of habitat for other hummingbirds.

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Hummingbirds can taste the amount of sugar in solution. They prefer sweeter concentrates, like those possible in a sugar and water feeder.

Food preferences. Ruby throated hummingbirds feed during the day on nectar from wildflower blossoms and flowers of shrubs and vines. Included are flowers of jewelweed, columbine, trumpet creeper, beebalm, honeysuckles, lilies, phlox and others. They draw nectar while hovering for the most part, but will feed while perched if possible. Insects, including mosquitoes, gnats, fruit flies and small bees, also make up a large percentage of the diet. They also eat birch tree sap, and spiders, caterpillars, aphids and insect eggs.

Nesting cover. Ruby-throated hummingbirds are primarily woodland birds. You'll find them in mixed woodlands, both deciduous and pine forests, and in woodland openings and at forest edges. They also visit gardens, orchards, yards, overgrown pastures, citrus groves, and fencerows. While their nectar and insect diet give the birds the water they need, you'll still find more ruby-throated hummingbirds in habitats near marsh and stream edges because they support more insect life. Nests are made of thistles, dandelions, and milkweeds, and the down of young leaves and ferns; they're mounted on tree limbs with spider webs. Oaks, maples, beech, poplar, pine, spruce and hackberry are common nesting trees.

Migratory habitat. The ruby-throated migrates thousands of miles each year to get a year-round source of nectar and insects; migratory habitat is similar to nesting habitat.

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Wildlife Ways
Did you know....

Hummingbirds, the smallest birds in North America, are the only birds that can fly backwards. Their wings are adapted to helicopter-like flight--a circular whirl that allows them to hover, move ahead, sideways or backward.

Bats: habitat basics

Bats can't seem to catch a break. Just as soon as more people find out how helpful they are, another vampire movie comes out and terrifies a whole new audience. The truth is, only three of more than 900 species of bats feed on the blood of other animals.

Many others feed on crop pests. Bats are important worldwide for their role in plant pollination, insect control, and dispersal of seeds. They are especially helpful in controlling crop pests; some bats eat 600 mosquito-sized insects in an hour.

But 40 percent of American bat species are in severe decline because of habitat loss. Reasons include loss of roosting habitat because of cave and mine closings, intentional habitat destruction, development and deforestation, and loss of trees, snags and hedgerows from farmlands. Here are the basic bat habitat needs.

Food preferences. Insect-eating bats feed primarily on night-flying insects such as moths, beetles, fruit flies, mosquitoes, and mayflies. They can consume half their body weight each night in insects-- some species eat grasshoppers and cicadas.

Fruit-eating bats eat fruit, pollen or nectar from plants and flowers as they pollinate such plants as bananas, mangoes, dates, figs, peaches, cashews and avocados.

Roosting cover. Being nocturnal, bats roost during the day in tree branches and leaves, under tree bark, in caves and mines, under bridges, in cliff crevices and natural tree cavities, and in attics and roofs of barns. Roosts may be for nursery colonies of females and their young; lower temperature bachelor roosts; and migratory stopover roosts.

Foraging needs. Most common foraging habitat is woodlot canopies and understory, over streams and other open water, open fields and croplands, over deserts, and in lighted residential areas with large insect populations. Bats skim water from the surface to drink while in flight.

Hibernation. Caves and abandoned mines are the largest hibernating habitat. That's why totally sealed mine closings can hurt bat populations. Some bats hibernate in tree cavities, tree bark crevices, and buildings.

Habitat interspersion. All the habitat components--roosting, food, water, foraging and hibernation habitat, are needed in relative proximity to each other.

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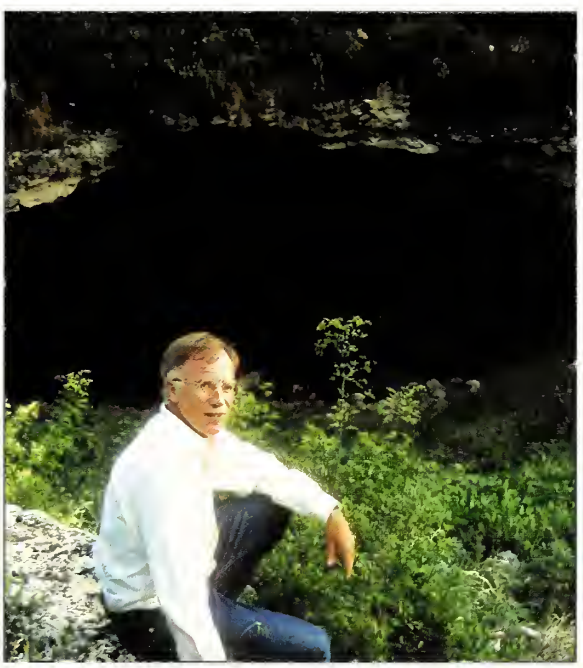

NRCS Photo

It takes hours each night for millions of bats to fly out of Bracken Cave near San Antonio in their quest for night-flying insect food.

Wildlife Ways
Did you know....

More than 900 species of bats exist worldwide, accounting for about one quarter of all mammal speeies.

Grassland birds: habitat basics

Grassland birds-- those that rely on grassland habitats for nesting, are found in all 50 states. They include the meadowlark, grouse, prairie chicken, dickcissel, sedge wren, killdeer, mourning dove, robin, bobolink, some sparrows, longspurs and many others.

As a group, populations of grassland birds have been declining--as a matter of fact, more so than any other group. The factor most likely for the decline is loss of breeding habitat.

Each grassland nesting bird species has its own unique set of habitat requirements. Habitat that benefits one species may not benefit another. But some generalizations can be made.

Native grasses and prairies. Prairie ecosystems and native grasses and forbs offer some of the highest quality nesting habitat to grassland birds. They are naturally adapted to this habitat; the problem is, in much of the country, native prairies are rarely found. But grassland birds can and do use "surrogate grasslands" in the form of hayfields, pastures, small grain fields, fallow fields and idled croplands. They also use strip habitats including grass waterways, field borders, grass filter strips, utility and railroad right of ways, road ditches, and other linear habitats with early successional management. In heavily farmed areas, these habitats are critical to grassland birds.

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Grassland birds are naturally adapted to native grasses and prairie ecosystems.

Most grassland birds can tolerate some woody vegetation within grasslands, but many species will avoid it. Grassland birds are split on their preference for short, medium and tall grass growth.

Food. Insects are the most common food source, but a wide variety of plants and animals are eaten. Insects include grasshoppers, crickets, beetles, ants, weevils, cutworms, wasps, spiders, earthworms, sow bugs, and many others. Big bluestem, little bluestem, switchgrass, sideoats grama, Indiangrass, wheatgrass, and green needlegrass are among the native grass seeds eaten.

Seeds of sedges and weeds, wild berries, corn, oats, wheat, barley and other small grains are among seed, fruit and crop diet items.

Grassland raptors prey on mice, gophers, voles, moles, shrews, prairie dogs, rabbits and others.

General needs. Where large blocks of undisturbed grassland occur, grassland birds will be able to court, nest, feed, loaf, raise young and survive.

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Wildlife Ways
Did you know....

More than 20 conservation practices and programs of the USDA Natural Resources Conservation Service can be used to improve or develop habitat for grassland birds.

Acknowledgements

Information sources.
The information in this series of articles came from a variety of sources. Primary sources include a series of leaflets published by the Natural Resources Conservation Service and the Wildlife Habitat Council, and *Attracting Iowa Wildlife on Private Lands*, a publication of the USDA Natural Resources Conservation Service in Iowa and the Iowa Department of Natural Resources. Other information came from NRCS specifications, various non-profit wildllife organizations and state wildlife conservation agencies.

Download photos from the Internet.
Many of the photographs in the series are from the NRCS photogallery. Those with an NRCS number beside them may be downloaded from the NRCS photogallery on the Internet at
http://photogallery.nrcs.usda.gov/
In addition, the NRCS appreciates the non-numbered photographs contributed by Roger Hill, Gary Kramer, Don Poggensee, Tim Tushla and Jeff Vanuga.


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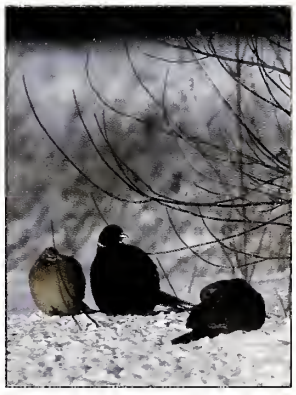
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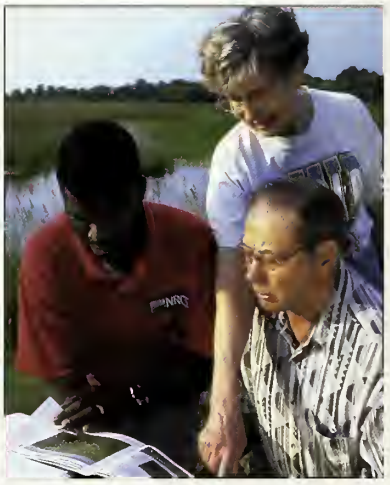

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Did you know....

Wherever you live in the United States, you are served by a local office of the Natural Resources Conservation Service. Technical help as well as financial incentives are available to private landowners to help plan, install and maintain conservation measures, including those that improve wildlife habitat. Find an office near you on the web at www.nrcs.usda.gov